



System Board User's Manual

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FCC and DOC Statement on Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

Notice:

1. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
2. Shielded interface cables must be used in order to comply with the emission limits.

Table of Contents

About this Manual.....	5
Warranty.....	5
Static Electricity Precaution.....	6
Safety Measures.....	6
About the Package.....	7
Before Using the System Board.....	7
 Chapter 1 - Introduction.....	 8
Specifications.....	8
Special Features of the System Board.....	11
 Chapter 2 - Hardware Installation.....	 16
System Board Layout	16
System Memory.....	17
CPU.....	20
Jumper Settings.....	26
Rear Panel I/O Ports.....	29
I/O Connectors.....	40
 Chapter 3 - BIOS Setup.....	 54
Award BIOS Setup Utility.....	54
Updating the BIOS.....	97
 Chapter 4 - Supported Softwares.....	 99
Drivers, Utilities and Software Applications.....	99
Installation Notes.....	109
 Appendix A - System Error Messages.....	 110
POST Beep.....	110
Error Messages.....	110
 Appendix B - Troubleshooting.....	 112
Troubleshooting Checklist.....	112

About this Manual

An electronic file of this manual is included in the CD. To view the user's manual in the CD, insert the CD into a CD-ROM drive. The autorun screen (Main Board Utility CD) will appear. Click "User's Manual" on the main menu.

Warranty

1. Warranty does not cover damages or failures that arise from misuse of the product, inability to use the product, unauthorized replacement or alteration of components and product specifications.
2. The warranty is void if the product has been subjected to physical abuse, improper installation, modification, accidents or unauthorized repair of the product.
3. Unless otherwise instructed in this user's manual, the user may not, under any circumstances, attempt to perform service, adjustments or repairs on the product, whether in or out of warranty. It must be returned to the purchase point, factory or authorized service agency for all such work.
4. We will not be liable for any indirect, special, incidental or consequential damages to the product that has been modified or altered.

Static Electricity Precautions

It is quite easy to inadvertently damage your PC, system board, components or devices even before installing them in your system unit. Static electrical discharge can damage computer components without causing any signs of physical damage. You must take extra care in handling them to ensure against electrostatic build-up.

1. To prevent electrostatic build-up, leave the system board in its anti-static bag until you are ready to install it.
2. Wear an antistatic wrist strap.
3. Do all preparation work on a static-free surface.
4. Hold the device only by its edges. Be careful not to touch any of the components, contacts or connections.
5. Avoid touching the pins or contacts on all modules and connectors. Hold modules or connectors by their ends.



Important:

Electrostatic discharge (ESD) can damage your processor, disk drive and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

Safety Measures

To avoid damage to the system:

- Use the correct AC input voltage range.

To reduce the risk of electric shock:

- Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.

Battery:

- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
- Dispose of used batteries according to the battery manufacturer's instructions.

About the Package

The system board package contains the following items. If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.

- ☑ The system board
- ☑ A user's manual
- ☑ Two IDE round cables
- ☑ One floppy round cable
- ☑ Two Serial ATA data cables
- ☑ One Serial ATA power cable
- ☑ One "nVRAID Driver" diskette
- ☑ One I/O shield
- ☑ One "Mainboard Utility" CD

The system board and accessories in the package may not come similar to the information listed above. This may differ in accordance to the sales region or models in which it was sold. For more information about the standard package in your region, please contact your dealer or sales representative.

Before Using the System Board

Before using the system board, prepare basic system components.

If you are installing the system board in a new system, you will need at least the following internal components.

- A CPU
- Memory module
- Storage devices such as hard disk drive, CD-ROM, etc.

You will also need external system peripherals you intend to use which will normally include at least a keyboard, a mouse and a video display monitor.

Chapter I - Introduction

Specifications

Processor

- AMD Athlon™ 64 FX / Athlon™ 64 / Sempron™
- Socket 939

System Bus

- 2000MT/s HyperTransport interface

Chipset

- nVIDIA® nForce3 Ultra

System Memory

- Four 184-pin DDR SDRAM DIMM sockets
- Supports dual channel (128-bit wide) memory interface
- Supports up to 4GB system memory
- Supports PC2100 (DDR266), PC2700 (DDR333) and PC3200 (DDR400) DDR SDRAM DIMM
- Supports x8/x16 non-ECC/ECC unbuffered DIMMs, up to 512Mb DDR devices

BIOS

- Award BIOS
- CPU/DRAM/AGP overclocking
- CPU/DRAM/Chipset overvoltage
- 4Mbit flash memory
- AMD Cool'n'Quiet™ technology

Energy Efficient Design

- Supports ACPI specification and OS Directed Power Management
- Supports ACPI STR (Suspend to RAM) function
- Wake-On-Events include:
 - Wake-On-PS/2 Keyboard/Mouse
 - Wake-On-Ring (external modem)
 - Wake-On-LAN
 - RTC timer to power-on the system
- AC power failure recovery

Hardware Monitor

- Monitors CPU/system temperature
- Monitors VCC3/5V/12V/5Vsb/Vbat voltages
- Monitors the speed of the cooling fans
- CPU Overheat Protection function monitors CPU temperature during system boot-up

Audio Features

- Realtek 6-channel audio CODEC
- True stereo line level outputs
- S/PDIF-in/out interface

Onboard LAN Features

- Gigabit PHY
- Fully compliant to IEEE 802.3 (10BASE-T), 802.3u (100BASE-TX) and 802.3ab (1000BASE-T) standards

IDE Interface with NVIDIA RAID

- Two IDE connectors support four UltraDMA 133Mbps hard drives
- NVIDIA RAID allows RAID arrays spanning across Serial ATA and Parallel ATA
- RAID 0, RAID 1, RAID 0+1 and JBOD

Serial ATA Interface with NVIDIA RAID

- Four Serial ATA interfaces with speed up to 1.5Gbps
 - Two Serial ATA ports supported by nForce3 Ultra chip
 - Two Serial ATA ports supported by Marvell SATA PHY
- NVIDIA RAID allows RAID arrays spanning across Serial ATA and Parallel ATA
- RAID 0, RAID 1, RAID 0+1 and JBOD

IEEE 1394 Interface

- VIA VT6307 controller
- Supports two 100/200/400 Mb/sec ports

Accelerated Graphics Port (A.G.P.)

- Supports AGP 8x up to 2132MB/sec. and AGP 4x up to 1066MB/sec. bandwidth for 3D graphics applications
- Supports 0.8/1.5V add-in cards

Rear Panel I/O Ports

- 1 PS/2 mouse port
- 1 PS/2 keyboard port
- 1 DB-25 parallel port
- 2 S/PDIF RCA jacks (S/PDIF-in and S/PDIF-out)
- 1 DB-9 serial port
- 1 IEEE 1394 port
- 1 RJ45 LAN port
- 4 USB 2.0/1.1 ports
- Line-in, line-out and mic-in jacks

I/O Connectors

- 2 connectors for 4 additional external USB 2.0/1.1 ports
- 1 connector for 1 external IEEE 1394 port
- 1 front audio connector for external line-out and mic-in jacks
- 1 CD-in internal audio connector
- 1 S/PDIF connector for optical cable connection
- 1 IrDA connector
- 4 Serial ATA connectors
- 2 IDE connectors
- 1 floppy connector
- 1 20-pin ATX power connector
- 1 4-pin ATX 12V power connector
- 1 front panel connector
- 3 fan connectors
- EZ touch switches (power switch and reset switch)

Expansion Slots

- 1 AGP 8x/4x slot
- 5 PCI slots

PCB

- ATX form factor
- 30.5cm (12") × 24cm (9.44")

Special Features of the System Board

AMD Athlon™ 64

The system board supports the AMD Athlon™ 64 processor. AMD Athlon™ 64 provides superior computing for many software applications by allowing both 32-bit and 64-bit applications to run simultaneously on the same platform. The operating system and software are able to process more data and access a tremendous amount of memory which improves the overall system performance.

2T timing which provides better system stability is supported in CG or later revisions of the AMD Athlon™ 64 processor. You can select the memory timing in the Genie BIOS Setting submenu ("DRAM Configuration" section) of the BIOS.

AMD Cool'n'Quiet™ Technology

The AMD Cool'n'Quiet™ technology allows the system to detect the CPU's tasks and utilization status. When the CPU's task slows down, the system effectively lowers power consumption by lowering its CPU speed and voltage, subsequently decreasing its noise level.

CPU Overheat Protection

CPU Overheat Protection has the capability of monitoring the CPU's temperature during system boot up. Once the CPU's temperature exceeded the temperature limit pre-defined by the CPU, the system will automatically shutdown. This preventive measure has been added to protect the CPU from damage and insure a safe computing environment.

DDR

DDR (Double Data Rate) is a type of SDRAM that doubles the data rate through reading and writing at both the rising and falling edge of each clock. This effectively doubles the speed of operation therefore providing two times faster data transfer:

**Note:**

If you are installing more than one double rank DDR400, the maximum DRAM speed will automatically be limited to the speed of a DDR333. However, the BIOS provides the option of manually adjusting the speed to DDR400 by selecting "200" in the "DRAM Frequency Set (Mhz)" field (Genie BIOS Setting submenu, DRAM Configuration section) of the BIOS.

S/PDIF

S/PDIF is a standard audio file transfer format that transfers digital audio signals to a device without having to be converted first to an analog format. This prevents the quality of the audio signal from degrading whenever it is converted to analog. S/PDIF is usually found on digital audio equipment such as a DAT machine or audio processing device. The S/PDIF connector on the system board sends surround sound and 3D audio signal outputs to amplifiers and speakers and to digital recording devices like CD recorders.

6-channel Audio

The audio jacks at the rear panel will support 6-channel audio only when the audio utility is configured to support this function. The mic-in at the rear will be disabled. Use the front audio's mic-in jack.

Serial ATA Interface

Serial ATA is a storage interface that is compliant with SATA 1.0 specification. With speed of up to 1.5Gbps, it improves hard drive performance faster than the standard parallel ATA.

NVIDIA RAID

NVIDIA RAID allows RAID arrays spanning across Serial ATA and Parallel ATA. It supports RAID 0, RAID 1, RAID 0+1 and JBOD.

IEEE 1394 Interface

IEEE 1394 is fully compliant with the 1394 OHCI (Open Host Controller Interface) 1.1 specification. It supports up to 63 devices that can run simultaneously on a system. 1394 is a fast external bus standard that supports data transfer rates of up to 400Mbps. In addition to its high speed, it also supports isochronous data transfer which is ideal for video devices that need to transfer high levels of data in real-time. 1394 supports both Plug-and-Play and hot plugging.

IrDA Interface

The system board is equipped with an IrDA connector for wireless connectivity between your computer and peripheral devices. The IRDA (Infrared Data Association) specification supports data transfers of 115K baud at a distance of 1 meter.

USB Ports

The system board supports USB 2.0 and USB 1.1 ports. USB 1.1 supports 12Mb/second bandwidth while USB 2.0 supports 480Mb/second bandwidth providing a marked improvement in device transfer speeds between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

Dual Function Power Button

Depending on the setting in the "Soft-Off By PBTN" field of the Power Management Setup, this switch will allow the system to enter the Soft-Off or Suspend mode.

AGP (Accelerated Graphics Port)

AGP is an interface designed to support high performance 3D graphics cards. It utilizes a dedicated pipeline to access system memory for texturing, z-buffering and alpha blending. The AGP slot supports AGP 8x (0.8V) with up to 2.13GB/sec. bandwidth and AGP 4x (1.5V) with up to 1066MB/sec. bandwidth for 3D graphics applications. AGP in this system board will deliver faster and better graphics to your PC.

Wake-On-Ring

This feature allows the system that is in the Suspend mode or Soft Power Off mode to wake-up/power-on to respond to calls coming from an external modem or respond to calls from a modem PCI card that uses the PCI PME (Power Management Event) signal to remotely wake up the PC.

**Important:**

If you are using a modem add-in card, the 5VSB power source of your power supply must support a minimum of $\geq 720\text{mA}$.

Wake-On-LAN

This feature allows the network to remotely wake up a Soft Power Down (Soft-Off) PC. It is supported via the onboard LAN port or via a PCI LAN card that uses the PCI PME (Power Management Event) signal. However, if your system is in the Suspend mode, you can power-on the system only through an IRQ or DMA interrupt.

**Important:**

The 5VSB power source of your power supply must support $\geq 720\text{mA}$.

Wake-On-PS/2 Keyboard/Mouse

This function allows you to use the PS/2 keyboard or PS/2 mouse to power-on the system.

**Important:**

The 5VSB power source of your power supply must support $\geq 720\text{mA}$.

RTC Timer to Power-on the System

The RTC installed on the system board allows your system to automatically power-on on the set date and time.

AC Power Failure Recovery

When power returns after an AC power failure, you may choose to either allow the system to power-on automatically or leave the system in Off state.

ACPI

The system board is designed to meet the ACPI (Advanced Configuration and Power Interface) specification. ACPI has energy saving features that enables PCs to implement Power Management and Plug-and-Play with operating systems that support OS Direct Power Management. Currently, only Windows® 98/2000/ME/XP supports the ACPI function allowing you to use the Suspend to RAM function.

With the Suspend to RAM function enabled, you can power-off the system at once by pressing the power button or selecting "Standby" when you shut down Windows® 98/2000/ME/XP without having to go through the sometimes tiresome process of closing files, applications and operating system. This is because the system is capable of storing all programs and data files during the entire operating session into RAM (Random Access Memory) when it powers-off. The operating session will resume exactly where you left off the next time you power-on the system.

**Important:**

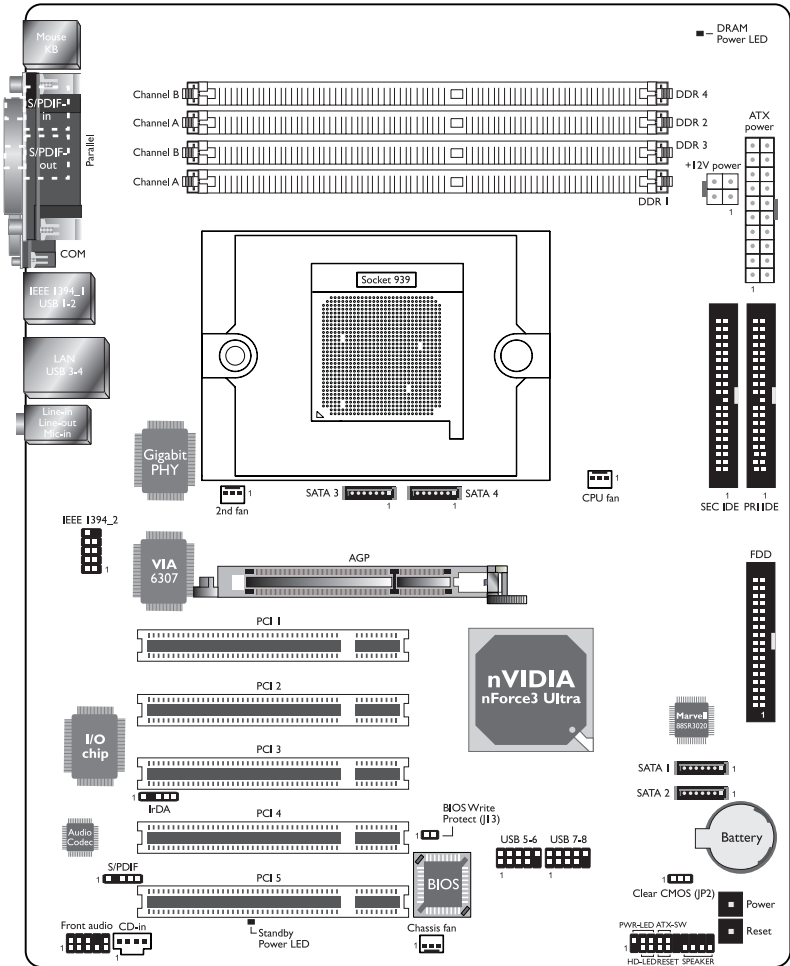
The 5VSB power source of your power supply must support $\geq 1A$.

Virus Protection

Most viruses today destroy data stored in hard drives. The system board is designed to protect the boot sector and partition table of your hard disk drive.

Chapter 2 - Hardware Installation

System Board Layout



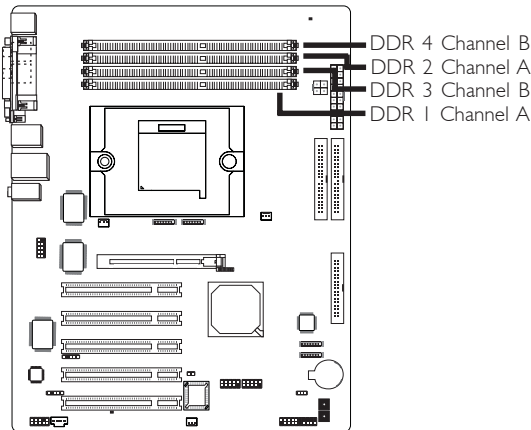

Warning:

Electrostatic discharge (ESD) can damage your system board, processor, disk drives, add-in boards, and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

System Memory


Warning:

When the DRAM Power LED lit red, it indicates that power is present on the DDR sockets. Power-off the PC then unplug the power cord prior to installing any memory modules. Failure to do so will cause severe damage to the motherboard and components.



The system board supports DDR SDRAM DIMM. Double Data Rate SDRAM (DDR SDRAM) is a type of SDRAM that doubles the data rate through reading and writing at both the rising and falling edge of each clock. This effectively doubles the speed of operation therefore doubling the speed of data transfer. Refer to chapter 1 (System Memory section) for detailed specification of the memory supported by the system board.

**Note:**

If you are installing more than one double rank DDR400, the maximum DRAM speed will automatically be limited to the speed of a DDR333. However, the BIOS provides the option of manually adjusting the speed to DDR400 by selecting "200" in the "Max Memclock (Mhz)" field (Genie BIOS Setting submenu, DRAM Configuration section) of the BIOS.

The four DDR DIMM sockets on the system board are divided into 2 channels: channel A and channel B.

The system board supports the following memory interface.

Single Channel (SC)

Data will be accessed in chunks of 64 bits (8B) from the memory channels.

Dual Channel (DC)

Data will be accessed in chunks of 128 bits from the memory channels. Dual channel provides better system performance because it doubles the data transfer rate.

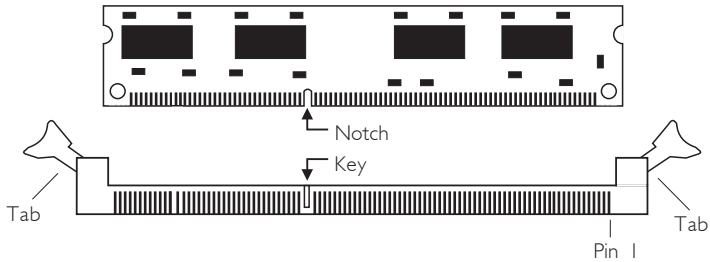
Single Channel	<ul style="list-style-type: none"> • DIMMs are on the same channel. • DIMMs in a channel can be identical or completely different. However, we highly recommend using identical DIMMs. • Not all slots need to be populated.
Dual Channel	<ul style="list-style-type: none"> • DIMMs of the same memory configuration are on different channels.

BIOS Setting

Configure the system memory in the Genie BIOS Setting submenu ("DRAM Configuration" section) of the BIOS.

Installing the DIM Module

A DIM module simply snaps into a DIMM socket on the system board. Pin 1 of the DIM module must correspond with Pin 1 of the socket.



1. Pull the “tabs” which are at the ends of the socket to the side.
2. Position the DIMM above the socket with the “notch” in the module aligned with the “key” on the socket.
3. Seat the module vertically into the socket. Make sure it is completely seated. The tabs will hold the DIMM in place.

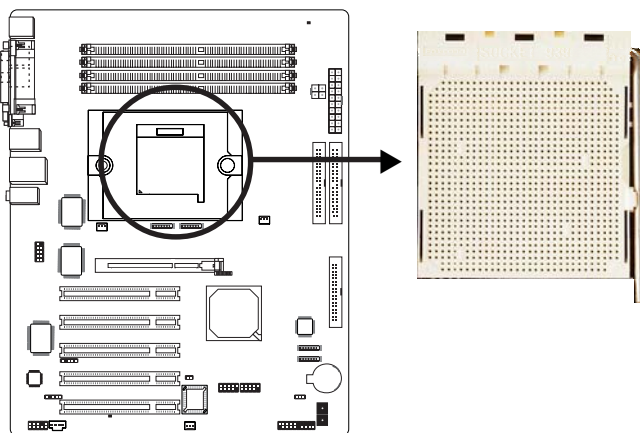
CPU

Overview

The system board is equipped with a surface mount 939-pin CPU socket. This socket is exclusively designed for installing an AMD CPU.

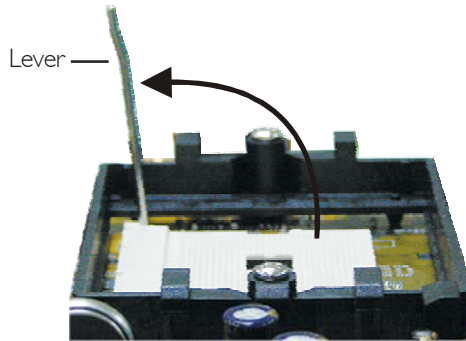
Installing the CPU

1. Make sure the PC and all other peripheral devices connected to it has been powered down.
2. Disconnect all power cords and cables.
3. Locate the 939-pin CPU socket on the system board.

**Important:**

If you are installing an AMD Athlon™ 64 FX CPU, make sure to use a high quality fan and heat sink assembly that will provide adequate heat dissipation.

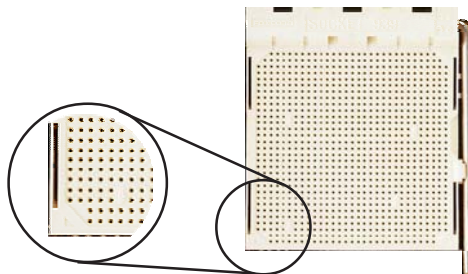
4. Unlock the socket by pushing the lever sideways, away from the socket, then lifting it up to a 90° angle. Make sure the lever is lifted to at least this angle otherwise the CPU will not fit in properly.



5. Position the CPU above the socket. The gold mark on the CPU must align with the corner of the CPU socket (refer to the enlarged view) shown below.

**Important:**

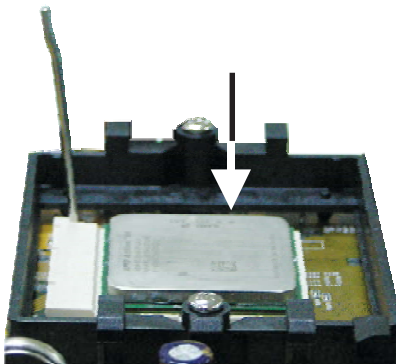
Handle the CPU by its edges and avoid touching the pins.



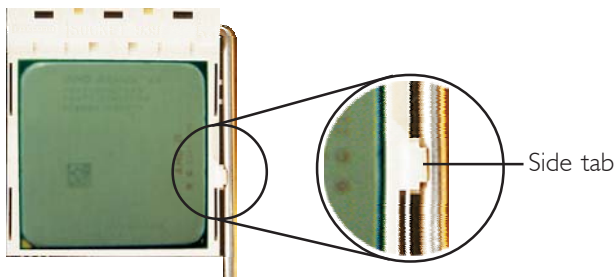
6. Insert the CPU into the socket until it is seated in place. The CPU will fit in only one orientation and can easily be inserted without exerting any force.

**Important:**

Do not force the CPU into the socket. Forcing the CPU into the socket may bend the pins and damage the CPU.



7. Once the CPU is in place, push down the lever to lock the socket. The lever should click on the side tab to indicate that the CPU is completely secured in the socket.



Installing the Fan and Heat Sink

The CPU must be kept cool by using a CPU fan with heat sink. Without sufficient air circulation across the CPU and heat sink, the CPU will overheat damaging both the CPU and system board.



Note:

- Use only certified fan and heat sink.
- The fan and heat sink package usually contains the fan and heat sink assembly, and an installation guide. If the installation procedure in the installation guide differs from the one in this section, please follow the installation guide in the package.

1. Before you install the fan / heat sink, you must apply a thermal paste onto the top of the CPU. The thermal paste is usually supplied when you purchase the CPU or fan heat sink assembly. Do not spread the paste all over the surface. When you later place the heat sink on top of the CPU, the compound will disperse evenly.

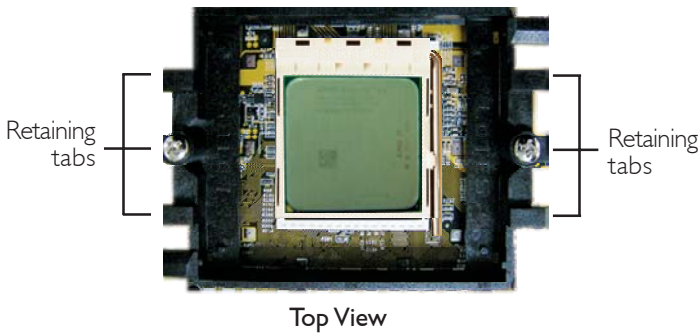
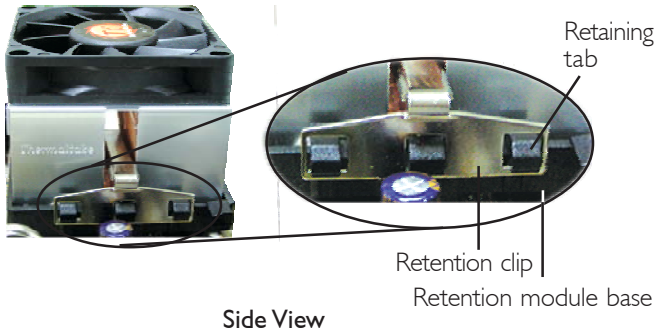
Do not apply the paste if the fan / heat sink already has a patch of thermal paste on its underside. Peel the strip that covers the paste before you place the fan / heat sink on top of the CPU.

2. The system board comes with the retention module base already installed.



Retention
module base

3. Place the heat sink on top of the CPU. Now hook one side of the retention clip onto the retention module base by fitting the holes on the retention clip into the retaining tabs of the retention module base.

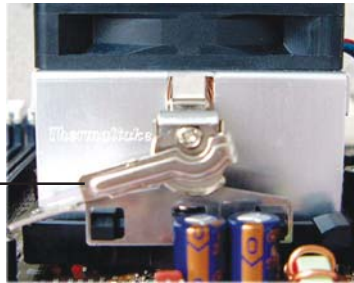


- Hook the other side of the retention clip (the one near the retention lever) so that the holes on the retention clip also fit into the retaining tabs of the retention module base.

**Note:**

You will not be able to secure the fan and heat sink assembly in place if it did not fit properly onto the retention module base.

Retention lever



- Move the retention lever to its opposite side then push it down to lock the fan and heat sink assembly to the retention module base.

**Note:**

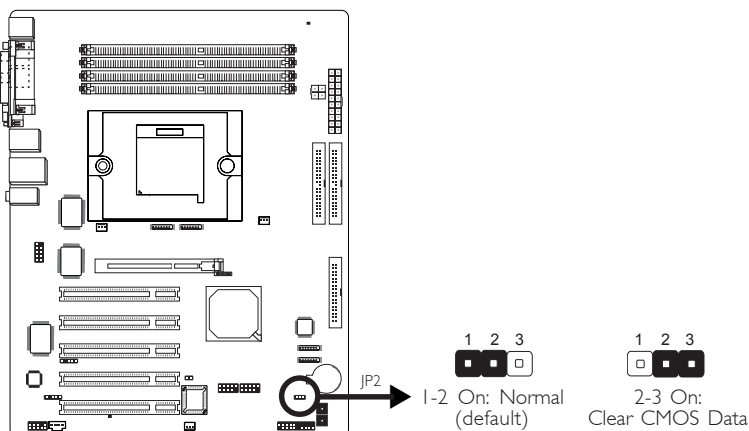
Make sure there is sufficient air circulation across the CPU fan and heat sink.



- Connect the CPU fan's cable connector to the CPU fan connector on the system board.

Jumper Settings

Clear CMOS Data



If you encounter the following,

- CMOS data becomes corrupted.*
- You forgot the keyboard, supervisor or user password.*
- You are unable to boot-up the computer system because the processor's clock was incorrectly set in the BIOS.*

you can reconfigure the system with the default values stored in the ROM BIOS.

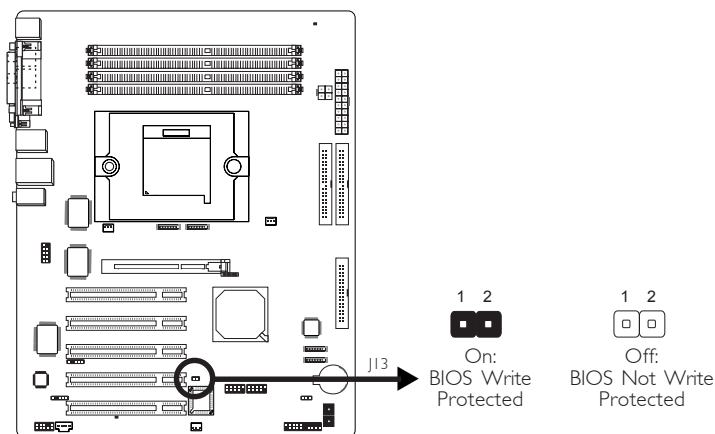
To load the default values stored in the ROM BIOS, please follow the steps below.

1. Power-off the system and unplug the power cord.
2. Set JP2 pins 2 and 3 to On. Wait for a few seconds and set JP2 back to its default setting, pins 1 and 2 On.
3. Plug the power cord and power-on the system.

If your reason for clearing the CMOS data is due to incorrect setting of the processor's clock in the BIOS, please proceed to step 4.

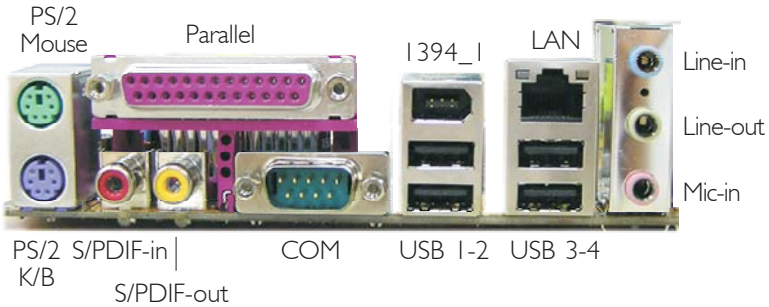
4. After powering-on the system, press to enter the main menu of the BIOS.
5. Select the Genie BIOS Setting submenu and press <Enter>.
6. Set the processor's clock to its default setting or an appropriate bus clock. Refer to the Genie BIOS Setting section in chapter 3 for more information.
7. Press <Esc> to return to the main menu of the BIOS setup utility. Select "Save & Exit Setup" and press <Enter>.
8. Type <Y> and press <Enter>.

BIOS Write Protect



J13 is used to enable or disable the BIOS Write Protect function. When enabled, the system will be protected from unnecessary updating or flashing of the BIOS. It secures the BIOS therefore any updates to it will not take effect.

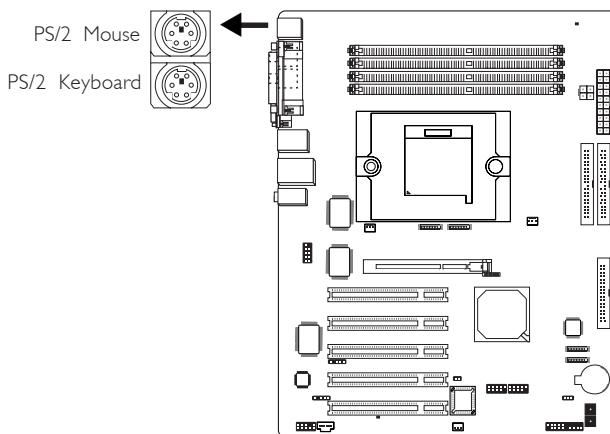
Rear Panel I/O Ports



The rear panel I/O ports consist of the following:

- PS/2 mouse port
- PS/2 keyboard port
- Parallel port
- S/PDIF-in jack
- S/PDIF-out jack
- COM port
- IEEE 1394_1 port
- USB ports
- LAN port
- Line-in jack
- Line-out jack
- Mic-in jack

PS/2 Mouse and PS/2 Keyboard Ports



The system board is equipped with an onboard PS/2 mouse (Green) and PS/2 keyboard (Purple) ports - both at location CN2 of the system board. The PS/2 mouse port uses IRQ12. If a mouse is not connected to this port, the system will reserve IRQ12 for other expansion cards.



Warning:

Make sure to turn off your computer prior to connecting or disconnecting a mouse or keyboard. Failure to do so may damage the system board.

Wake-On-PS/2 Keyboard/Mouse

The Wake-On-PS/2 Keyboard/Mouse function allows you to use the PS/2 keyboard or PS/2 mouse to power-on the system. To use this function:

- **BIOS Setting:**

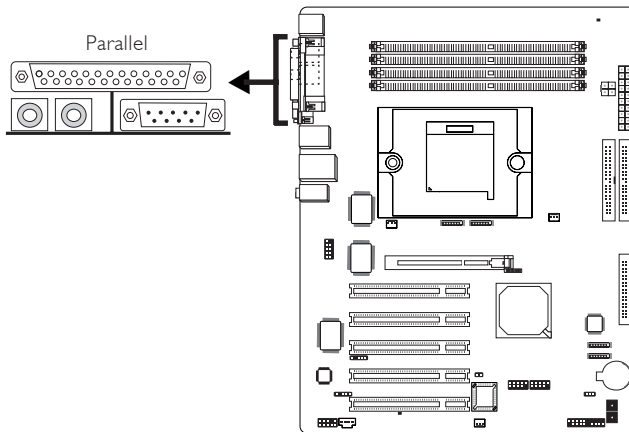
Configure the PS/2 keyboard/mouse wake up function in the Integrated Peripherals submenu ("Onboard Device" section) of the BIOS. Refer to chapter 3 for more information.



Important:

The 5VSB power source of your power supply must support $\geq 720\text{mA}$.

Parallel Port



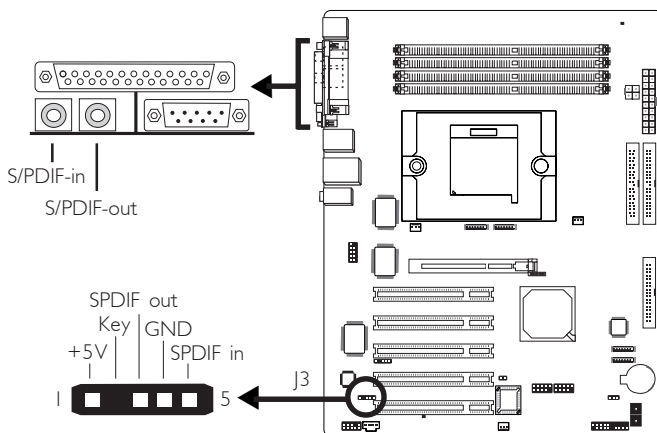
The system board has a standard parallel port (Burgundy) at location CN1 for interfacing your PC to a parallel printer. It supports SPP, ECP and EPP.

Setting	Function
SPP (Standard Parallel Port)	Allows normal speed operation but in one direction only.
ECP (Extended Capabilities Port)	Allows parallel port to operate in bidirectional mode and at a speed faster than the SPP's data transfer rate.
EPP (Enhanced Parallel Port)	Allows bidirectional parallel port operation at maximum speed.

BIOS Setting

Configure the parallel port in the Integrated Peripherals submenu ("Onboard Device" section) of the BIOS. Refer to chapter 3 for more information.

S/PDIF

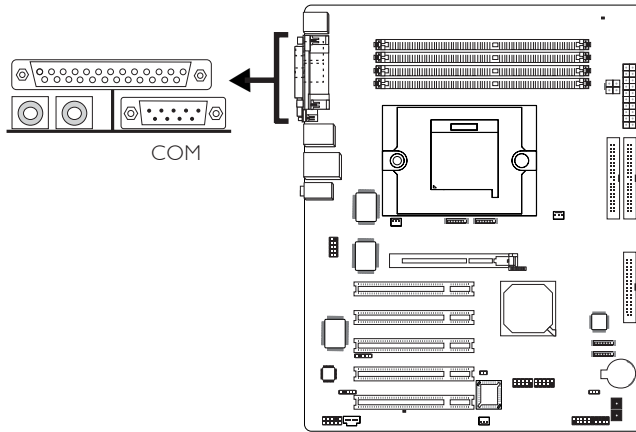


The system board is equipped with an onboard S/PDIF-in RCA jack (red) and a S/PDIF-out RCA jack (yellow) at locations CN5 and CN7 respectively.

The S/PDIF connector at location J3 is for optical S/PDIF cable connection. Connect the optical audio cable connector of your S/PDIF module to J3. Make sure pin 1 of the audio cable connector is aligned with pin 1 of J3.

DO NOT use RCA S/PDIF and optical S/PDIF at the same time.

Serial Port

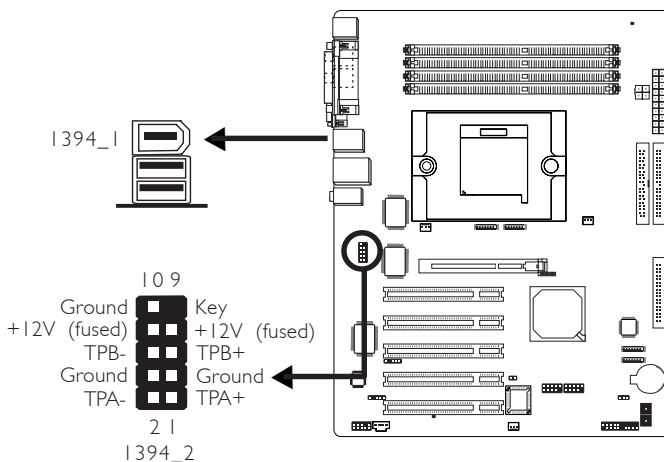


The system board is equipped with an onboard serial port (Teal/Turquoise) at location J1. The serial port is an RS-232C asynchronous communication port with 16C550A-compatible UARTs that can be used with a modem, serial printer, remote display terminal or other serial devices.

BIOS Setting

Select the serial port's I/O address in the Integrated Peripherals submenu ("Onboard Device" section) of the BIOS. Refer to chapter 3 for more information.

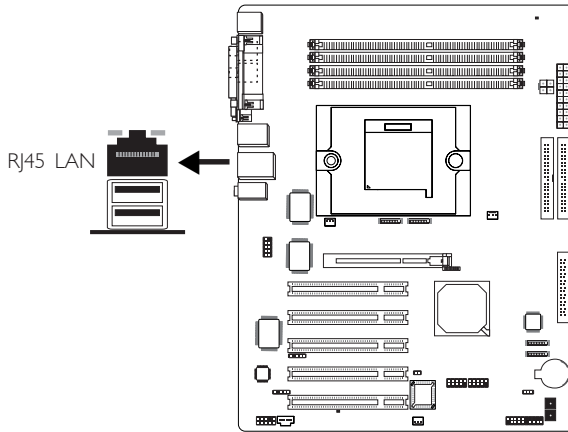
IEEE 1394



The system board is equipped with an on-board IEEE 1394 port at location CN3 (IEEE 1394_1) of the system board.

It is also equipped with an IEEE 1394 connector at location J8 (1394_2) for connecting an additional 1394 device. Your 1394 port may come mounted on a card-edge bracket. Install the card-edge bracket to the system chassis then insert the connector that is attached to the 1394 port cable to J8. Make sure pin 1 of the cable connector is aligned with pin 1 of the J8.

RJ45 Fast-Ethernet Port



The system board is equipped with an onboard RJ45 fast-ethernet LAN port at location CN4 of the system board. It allows the system board to connect to a local area network by means of a network hub.

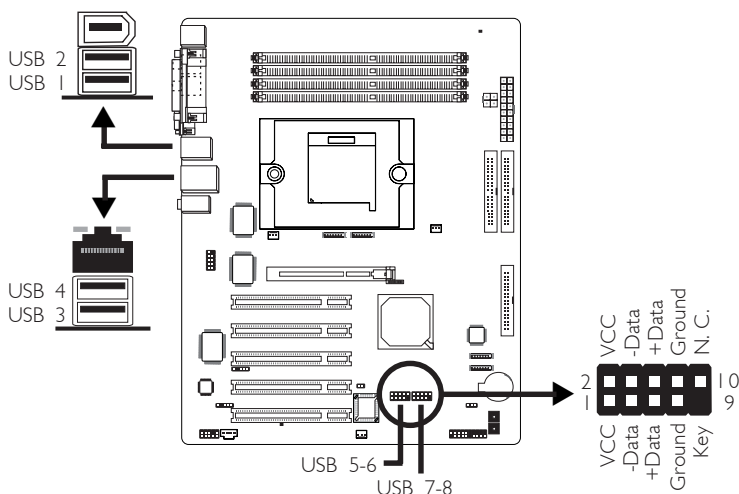
BIOS Setting

Configure the onboard LAN in the Integrated Peripherals submenu of the BIOS. Refer to chapter 3 for more information.

Driver Installation

Install the “LAN Drivers”. Refer to chapter 4 for more information.

Universal Serial Bus Ports



Four onboard USB 2.0/1.1 ports (Black) are at locations CN3 (USB 1-2) and CN4 (USB 3-4) of the system board.

J17 (USB 5-6) and J18 (USB 7-8) connectors allow you to connect 4 additional USB 2.0/1.1 ports. The USB ports may be mounted on a card-edge bracket. Install the card-edge bracket to the system chassis then insert the connector that is attached to the USB port cables to J17 or J18.

BIOS Setting

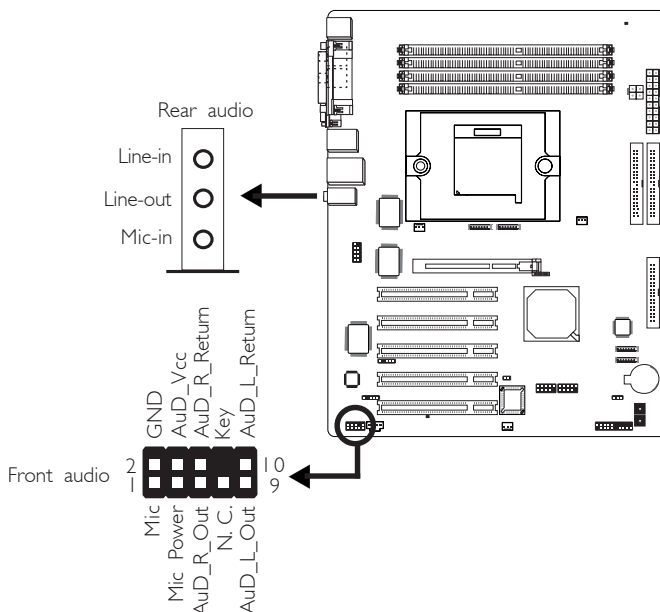
Configure the onboard USB in the Integrated Peripherals submenu of the BIOS. Refer to chapter 3 for more information.

Driver Installation

You may need to install the proper drivers in your operating system to use the USB device. Refer to your operating system's manual or documentation for more information.

Refer to chapter 4 for more information about installing the USB 2.0 driver.

Audio (Rear Audio and Front Audio)



Rear Audio (CN6)

- **Line-in (Light Blue)**

In a 2-channel mode, this jack is used to connect any audio devices such as Hi-fi set, CD player, tape player, AM/FM radio tuner, synthesizer, etc. In a 4-channel or 6-channel mode, this jack functions as rear right/left speaker out.

- **Line-out (Lime)**

In a 2-channel mode, this jack is used to connect a headphone or external speakers. In a 4-channel or 6-channel mode, this jack functions as front right/left speaker out.

- **Mic-in (Pink)**

In a 2-channel or 4-channel mode, this jack is used to connect an external microphone. In a 6-channel mode, this jack functions as Center/Subwoofer.

	2-channel	4-channel	6-channel
Light Blue	Line-in	Rear R/L	Rear R/L
Lime	Line-out	Front R/L	Front R/L
Pink	Mic-in	Mic-in	Center/Subwoofer

Front Audio

The front audio connector (J2) allows you to connect to the line-out and mic-in jacks that are at the front panel of your system. Using this connector will disable the rear audio's line-out and mic-in functions.

Remove the jumper caps from pins 5-6 and pins 9-10 of J2 prior to connecting the front audio cable connector. Make sure pin 1 of the cable connector is aligned with pin 1 of J2. If you are not using this connector, make sure to replace the jumper caps back to their original pin locations.

Pins 5-6 and 9-10 short
(default)

The front audio is disabled.
The rear audio is enabled.

Pins 5-6 and 9-10 open

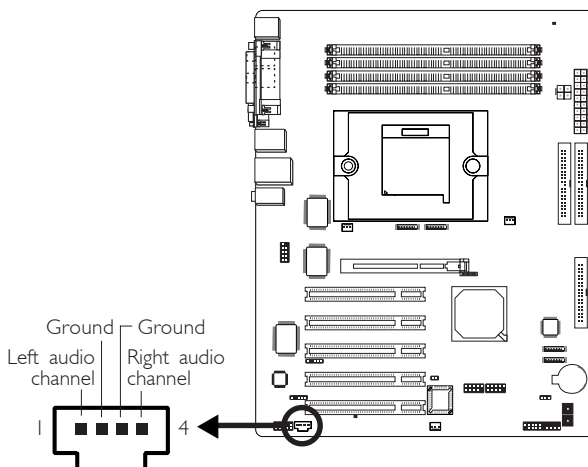
The front audio is enabled.
The rear audio is disabled.

Driver Installation

Install the "Audio Drivers". An audio software application program will at the same time be installed into your system. Refer to chapter 4 for more information.

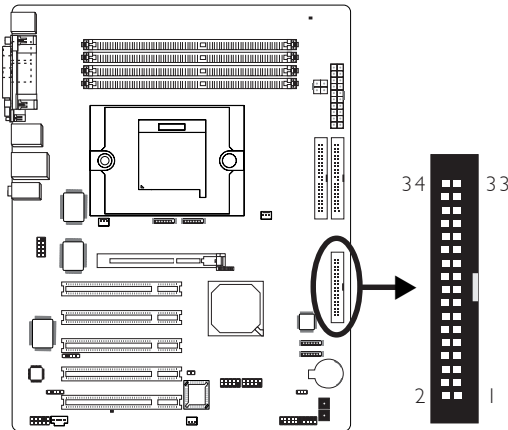
I/O Connectors

CD-in Internal Audio Connector



The CD-in (J4) connector is used to receive audio from a CD-ROM drive, TV tuner or MPEG card.

Floppy Disk Drive Connector



The system board is equipped with a shrouded floppy disk drive connector for connecting two standard floppy disk drives. To prevent improper floppy cable installation, the shrouded floppy disk header has a keying mechanism. The 34-pin connector on the floppy cable can be placed into the header only if pin 1 of the connector is aligned with pin 1 of the header.

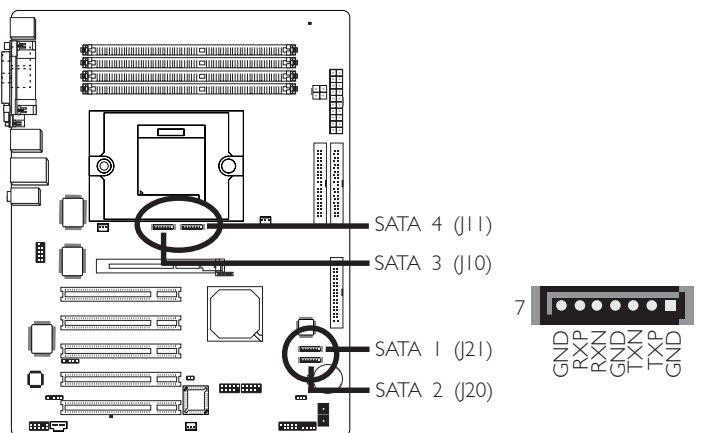
Connecting the Floppy Disk Drive Cable

Install one end of the floppy disk drive cable into the shrouded floppy disk header (J23) on the system board and the other end-most connector to the drive you want to designate as Drive A. If you are connecting another drive (Drive B), install the middle connector of the cable to the drive. The colored edge of the daisy chained ribbon cable should be aligned with pin 1 of J23.

BIOS Setting

Enable or disable this function in the Integrated Peripherals submenu ("Onboard Device" section) of the BIOS. Refer to chapter 3 for more information.

Serial ATA Connectors



- Four Serial ATA interfaces with speed up to 1.5Gbps
 - Two Serial ATA ports supported by nForce3 Ultra chip
 - Two Serial ATA ports supported by Marvell SATA PHY
- RAID 0, RAID 1, RAID 0+1 and JBOD
- NVIDIA RAID allows RAID arrays spanning across Serial ATA and Parallel ATA

Connecting Serial ATA Cables

Connect one end of the Serial ATA cable to the Serial ATA connector and the other end to your Serial ATA device.

Configuring RAID

The following describes the basic steps on configuring RAID.

1. Set the "IDE RAID" field to "Enabled". (Integrated Peripherals submenu - "RAID Config" section of the Award BIOS.)
2. Enable the IDE and/or Serial ATA drives you want to configure as RAID in the Integrated Peripherals submenu (RAID Config section) of the Award BIOS.
3. Reboot the PC.

4. When the system powers-up, the NVRAID BIOS status message screen will appear. Press the <F10> key to enter the utility. The utility allows you to build a RAID system on Serial ATA drives and Parallel ATA drives.
5. Install the NVRAID driver:

If you are in the process of installing Windows® XP or Windows® 2000 on RAID configured Serial ATA drives, you will need the provided nVRAID driver floppy diskette. If you are installing the driver on existing Windows® XP or Windows® 2000, install the NVIDIA Windows nForce Drivers that is in the provided CD.

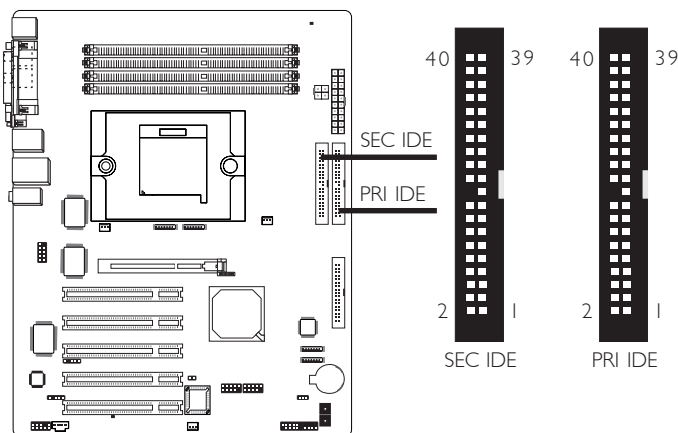
For steps 1 to 4, refer to chapter 3 for more information. For step 5, refer to chapter 4 for more information.



Important:

Before creating RAID, make sure you have installed the Serial/Parallel ATA drives and connected the data cables otherwise you won't be able to enter the NVIDIA RAID BIOS utility.

IDE Disk Drive Connector



Configuring RAID on IDE Drives

The system board allows configuring RAID across Parallel ATA drives and Serial ATA drives. It supports RAID 0, RAID 1, RAID 0+1 and JBOD. For optimal performance, install identical drives of the same model and capacity. The drives' matched performance allows the RAID array to function better as a single drive.

1. Set the "IDE RAID" field to "Enabled". (Integrated Peripherals submenu - "RAID Config" section of the Award BIOS.)
2. Enable the IDE and/or Serial ATA drives you want to configure as RAID in the Integrated Peripherals submenu (RAID Config section) of the Award BIOS.
3. Reboot the PC.
4. When the system powers-up, the NVRAID BIOS status message screen will appear. Press the <F10> key to enter the utility. The utility allows you to build a RAID system on Serial ATA drives and Parallel ATA drives.

5. Install the NVRAID driver.

If you are in the process of installing Windows® XP or Windows® 2000 on RAID configured Serial ATA drives, you will need the provided nVRAID driver floppy diskette. If you are installing the driver on existing Windows® XP or Windows® 2000, install the NVIDIA Windows nForce Drivers that is in the provided CD.

For steps 1 to 4, refer to chapter 3 for more information. For step 5, refer to chapter 4 for more information.



Important:

Before creating RAID, make sure you have installed the Serial/Parallel ATA drives and connected the data cables otherwise you won't be able to enter the NVIDIA RAID BIOS utility.

Connecting the IDE Disk Drive Cable

The system board is equipped with two shrouded PCI IDE headers that will interface four Enhanced IDE (Integrated Drive Electronics) disk drives. To prevent improper IDE cable installation, each shrouded PCI IDE header has a keying mechanism. The 40-pin connector on the IDE cable can be placed into the header only if pin 1 of the connector is aligned with pin 1 of the header.

Each IDE connector supports 2 devices, a Master and a Slave. Use an IDE ribbon cable to connect the drives to the system board. An IDE ribbon cable has 3 connectors on them, one that plugs into an IDE connector on the system board and the other 2 connect to IDE devices. The connector at the end of the cable is for the Master drive and the connector in the middle of the cable is for the Slave drive.

Install one end of the IDE cable into the Primary IDE header (J25) on the system board and the other connectors to the IDE devices. If you are adding a third or fourth IDE device, use another IDE cable and install one end of the cable into the Secondary IDE header (J22) on the system board and the other connectors to the IDE devices.



Note:

Refer to your disk drive user's manual for information about selecting proper drive switch settings.

Adding a Second IDE Disk Drive

When using two IDE drives, one must be set as the master and the other as the slave. Follow the instructions provided by the drive manufacturer for setting the jumpers and/or switches on the drives.

The system board supports Enhanced IDE or ATA-2, ATA/33, ATA/66 or ATA/100 hard drives. We recommend that you use hard drives from the same manufacturer. In a few cases, drives from two different manufacturers will not function properly when used together. The problem lies in the hard drives, not the system board.

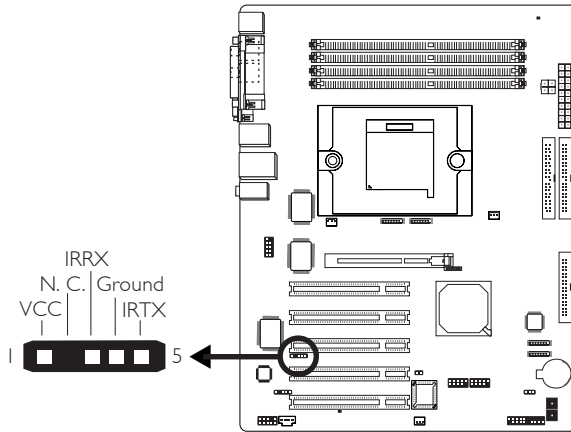
**Important:**

If you encountered problems while using an ATAPI CD-ROM drive that is set in Master mode, please set the CD-ROM drive to Slave mode. Some ATAPI CD-ROMs may not be recognized and cannot be used if incorrectly set in Master mode.

BIOS Setting

Configure the onboard IDE in the Integrated Peripherals submenu ("IDE Function Setup" section) of the BIOS. Refer to chapter 3 for more information.

IrDA Connector



Connect your IrDA cable to connector J5 on the system board.



Note:

The sequence of the pin functions on some IrDA cable may be reversed from the pin function defined on the system board. Make sure to connect the cable to the IrDA connector according to their pin functions.

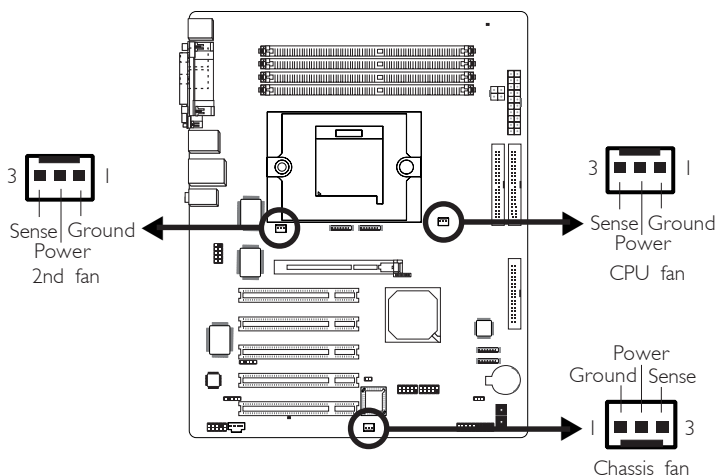
BIOS Setting

Configure IrDA in the Integrated Peripherals submenu ("Onboard Device" section) of the BIOS. Refer to chapter 3 for more information.

Driver Installation

You may need to install the proper drivers in your operating system to use the IrDA function. Refer to your operating system's manual or documentation for more information.

Cooling Fan Connectors

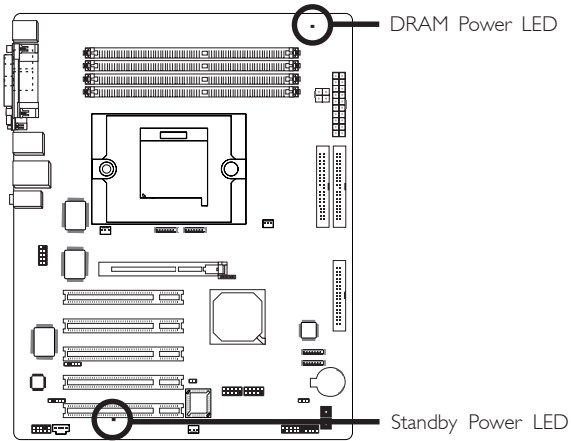


Connect the CPU fan's cable connector to the CPU fan connector (J32) on the system board. The 2nd fan connector (J6) and chassis fan connector (J31) are used to connect additional cooling fans. The cooling fans will provide adequate airflow throughout the chassis to prevent overheating the CPU and system board components.

BIOS Setting

The "PC Health Status" submenu of the BIOS will display the current speed of the cooling fans. Refer to chapter 3 for more information.

DRAM Power LED and Standby Power LED



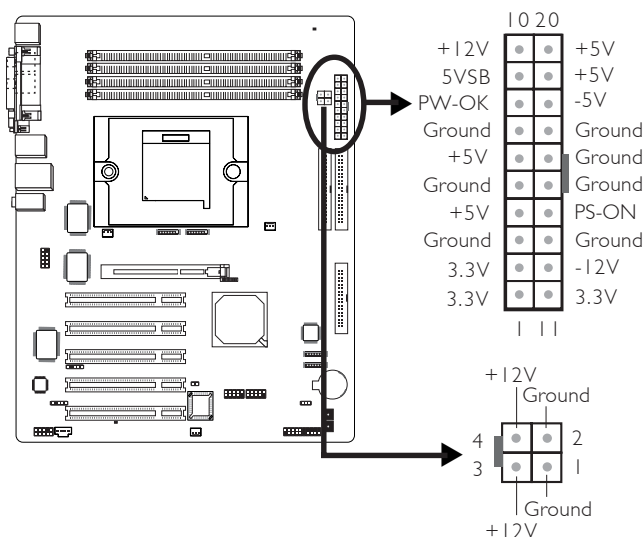
DRAM Power LED

This LED will light when the system's power is on.

Standby Power LED

This LED will light when the system is in the standby mode.

Power Connectors

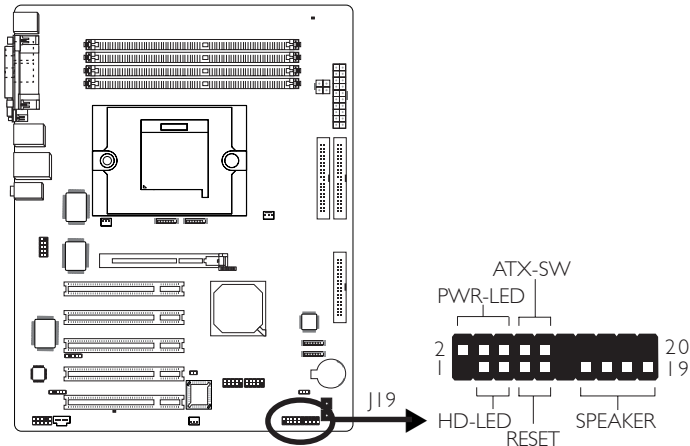


Use a power supply that complies with the ATX12V Power Supply Design Guide Version 1.1. An ATX12V power supply has a standard 20-pin ATX main power connector and a 4-pin +12V power connector that must be inserted onto J24 and CN10 connectors respectively.

The 4-pin +12V power connector enables the delivery of more +12VDC current to the processor's Voltage Regulator Module (VRM).

The system board requires a minimum of 250 Watt power supply to operate. Your system configuration (amount of memory, add-in cards, peripherals, etc.) may exceed the minimum power requirement. To ensure that adequate power is provided, use a 300 Watt (or greater) power supply.

Front Panel Connectors



HD-LED: Primary/Secondary IDE LED

This LED will light when the hard drive is being accessed.

RESET: Reset Switch

This switch allows you to reboot without having to power off the system thus prolonging the life of the power supply or system.

SPEAKER: Speaker Connector

This connects to the speaker installed in the system chassis.

ATX-SW: ATX Power Switch

Depending on the setting in the BIOS setup, this switch is a “dual function power button” that will allow your system to enter the Soft-Off or Suspend mode. Refer to “Soft-Off By PBTN” in the Power Management Setup (Chapter 3).

PWR-LED: Power/Standby LED

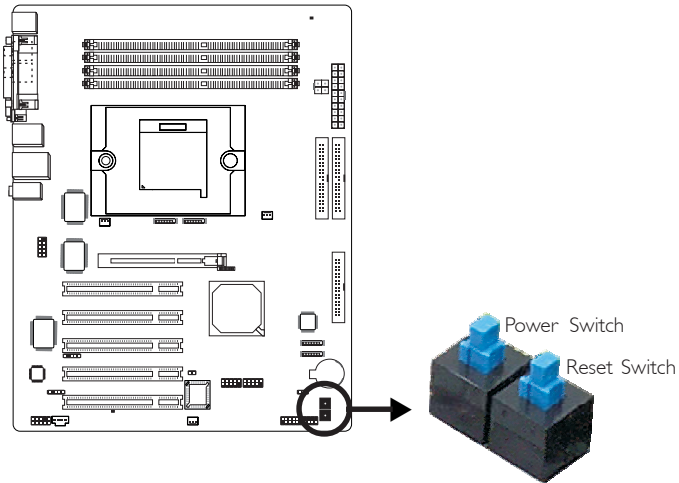
When the system's power is on, this LED will light. When the system is in the S1 (POS - Power On Suspend) or S3 (STR - Suspend To RAM) state, it will blink every second.

**Note:**

If a system did not boot-up and the Power/Standby LED did not light after it was powered-on, it may indicate that the CPU or memory module was not installed properly. Please make sure they are properly inserted into their corresponding socket.

	Pin	Pin Assignment
HD-LED (Primary/Secondary IDE LED)	3 5	HDD LED Power HDD
Reserved	14 16	N. C. N. C.
ATX-SW (ATX power switch)	8 10	PWRBT+ PWRBT-
Reserved	18 20	N. C. N. C.
RESET (Reset switch)	7 9	Ground H/W Reset
SPEAKER (Speaker connector)	13 15 17 19	Speaker Data N. C. Ground Speaker Power
PWR-LED (Power/Standby LED)	2 4 6	LED Power (+) LED Power (+) LED Power (-) or Standby Signal

EZ Touch Switches



The presence of the power switch and reset switch on the system board are user-friendly especially to DIY users. They provide convenience in powering on and/or resetting the system while fine tuning the system board before it is installed into the system chassis.

Chapter 3 - BIOS Setup

Award BIOS Setup Utility

The Basic Input/Output System (BIOS) is a program that takes care of the basic level of communication between the processor and peripherals. In addition, the BIOS also contains codes for various advanced features found in this system board. This chapter explains the Setup Utility for the Award BIOS.

After you power up the system, the BIOS message appears on the screen and the memory count begins. After the memory test, the following message will appear on the screen:

Press DEL to enter setup

If the message disappears before you respond, restart the system or press the “Reset” button. You may also restart the system by pressing the <Ctrl> <Alt> and keys simultaneously.

When you press , the main menu screen will appear:



Standard CMOS Features

Use the arrow keys to highlight “Standard CMOS Features” and press <Enter>. A screen similar to the one below will appear:

Phoenix - AwardBIOS CMOS Setup Utility		
Standard CMOS Features		
Date <mm:dd:yy>	Tue, Jan 18 2005	Item Help Menu Level ▶ Change the day, month, year and century
Time <hh:mm:ss>	9 : 0 : 40	
▶ IDE Channel 0 Master	None	
▶ IDE Channel 0 Slave	None	
▶ IDE Channel 1 Master	None	
▶ IDE Channel 1 Slave	None	
Drive A	1.44M, 3.5 in.	
Drive B	None	
Video	EGA/UGA	
Halt On	All , But Keyboard	
Base Memory	640K	
Extended Memory	65472K	
Total Memory	1024K	
↑↓←→: Move Enter: Select +/~/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

The settings on the screen are for reference only. Your version may not be identical to this one.

Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Sunday to Saturday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1994 to 2079.

Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

IDE Channel 0 Master, IDE Channel 0 Slave, IDE Channel 1 Master and IDE Channel 1 Slave

Move the cursor to a field then press <Enter>. The following screen will appear:

Phoenix - AwardBIOS CMOS Setup Utility		
IDE Channel 0 Master		
IDE HDD Auto-Detection	Press Enter	Item Help
IDE Channel 0 Master	Auto	Menu Level >>
Access Mode	Auto	To auto-detect the HDD's size, head... on this channel
Capacity	0 MB	
Cylinder	0	
Head	0	
Precomp	0	
Landing Zone	0	
Sector	0	
↑↓: Move Enter: Select +/~/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

The settings on the screen are for reference only. Your version may not be identical to this one.

IDE HDD Auto-Detection

Detects the parameters of the drive. The parameters will automatically be shown on the screen.

IDE Channel 0 Master, IDE Channel 0 Slave, IDE Channel 1 Master and IDE Channel 1 Slave

The drive type information should be included in the documentation from your hard disk vendor. If you select "Auto", the BIOS will auto-detect the HDD & CD-ROM drive at the POST stage and show the IDE for the HDD & CD-ROM drive. If a hard disk has not been installed, select "None".

Access Mode

For hard drives larger than 528MB, you would typically select the LBA type. Certain operating systems require that you select CHS or Large. Please check your operating system's manual or Help desk on which one to select.

Capacity

Displays the approximate capacity of the disk drive. Usually the size is slightly greater than the size of a formatted disk given by a disk checking program.

Cylinder

This field displays the number of cylinders.

Head

This field displays the number of read/write heads.

Precomp

This field displays the number of cylinders at which to change the write timing.

Landing Zone

This field displays the number of cylinders specified as the landing zone for the read/write heads.

Sector

This field displays the number sectors per track.

Drive A and Drive B

These fields identify the types of floppy disk drives installed.

<i>None</i>	No floppy drive is installed
<i>360K, 5.25 in.</i>	5-1/4 in. standard drive; 360KB capacity
<i>1.2M, 5.25 in.</i>	5-1/4 in. AT-type high-density drive; 1.2MB capacity
<i>720K, 3.5 in.</i>	3-1/2 in. double-sided drive; 720KB capacity
<i>1.44M, 3.5 in.</i>	3-1/2 in. double-sided drive; 1.44MB capacity
<i>2.88M, 3.5 in.</i>	3-1/2 in. double-sided drive; 2.88MB capacity

Video

This field selects the type of video adapter used for the primary system monitor. Although secondary monitors are supported, you do not have to select the type. The default setting is EGA/VGA.

<i>EGA/VGA</i>	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SVGA and PGA monitor adapters.
<i>CGA 40</i>	Color Graphics Adapter. Power up in 40-column mode.
<i>CGA 80</i>	Color Graphics Adapter. Power up in 80-column mode.
<i>Mono</i>	Monochrome adapter. Includes high resolution monochrome adapters.

Halt On

This field determines whether the system will stop if an error is detected during power up. The default setting is All Errors.

<i>No Errors</i>	The system boot will not stop for any errors detected.
<i>All Errors</i>	The system boot will stop whenever the BIOS detects a non-fatal error.
<i>All, But Keyboard</i>	The system boot will not stop for a keyboard error; it will stop for all other errors.
<i>All, But Diskette</i>	The system boot will not stop for a disk error; it will stop for all other errors.
<i>All, But Disk/Key</i>	The system boot will not stop for a disk or keyboard error; it will stop for all other errors.

Base Memory

Displays the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the motherboard or 640K for systems with 640K or more memory installed on the motherboard.

Extended Memory

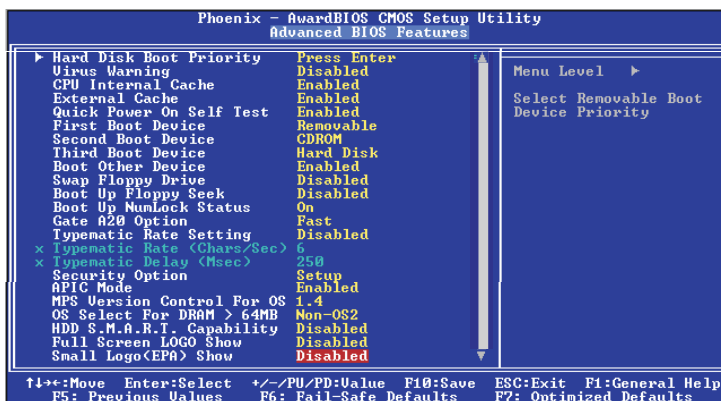
Displays the amount of extended memory detected during boot-up.

Total Memory

Displays the total memory available in the system.

Advanced BIOS Features

The Advanced BIOS Features allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.



The screen above list all the fields available in the Advanced BIOS Features submenu, for ease of reference in this manual. In the actual CMOS setup, you have to use the scroll bar to view the fields. The settings on the screen are for reference only. Your version may not be identical to this one.

Hard Disk Boot Priority

This field is used to select the boot sequence of the hard drives. Move the cursor to this field then press <Enter>. Use the Up or Down arrow keys to select a device then press <+> to move it up or <-> to move it down the list.



The settings on the screen are for reference only. Your version may not be identical to this one.

Virus Warning

This field protects the boot sector and partition table of your hard disk drive. When this field is enabled, the Award BIOS will monitor the boot sector and partition table of the hard disk drive. If an attempt is made to write to the boot sector or partition table of the hard disk drive, the BIOS will halt the system and an error message will appear:

After seeing the error message, if necessary, you will be able to run an anti-virus program to locate and remove the problem before any damage is done.

Many disk diagnostic programs which attempt to access the boot sector table will cause the warning message to appear. If you are running such a program, we recommend that you first disable this field.

CPU Internal Cache and External Cache

These fields speed up the memory access. The default is Enabled, which provides better performance by enabling cache.

Quick Power On Self Test

This field speeds up Power On Self Test (POST) whenever the system is powered on. The BIOS will shorten or skip some check items during POST. To attain the shortest POST time, select "Enabled".

First Boot Device, Second Boot Device, Third Boot Device and Boot Other Device

Select the drive to boot first, second and third in the "First Boot Device" "Second Boot Device" and "Third Boot Device" fields respectively. The BIOS will boot the operating system according to the sequence of the drive selected. Set "Boot Other Device" to Enabled if you wish to boot from another device.

Swap Floppy Drive

When this field is enabled and the system is booting from the floppy drive, the system will boot from drive B instead of drive A. When this field is disabled and the system is booting from the floppy drive, the system will boot from drive A. You must have two floppy drives to use this function.

Boot Up Floppy Seek

When enabled, the BIOS will check whether the floppy disk drive installed is 40 or 80 tracks. Note that the BIOS cannot distinguish between 720K, 1.2M, 1.44M and 2.88M drive types as they are all 80 tracks. When disabled, the BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360KB.

Boot Up NumLock Status

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

Gate A20 Option

This field allows you to select how gate A20 is handled. Gate A20 is a device used to address memory above 1 Mbyte. Initially, gate A20 was handled via the keyboard controller. Today, while keyboards still provide this support, it is more common, and much faster, for the system chipset to provide support for gate A20. A20 refers to the first 64KB of extended memory.

- Fast* The chipset controls Gate A20.
- Normal* A pin in the keyboard controller controls Gate A20.

Typematic Rate Setting

- Disabled* Continually holding down a key on your keyboard will cause the BIOS to report that the key is down.
- Enabled* The BIOS will not only report that the key is down, but will first wait for a moment, and, if the key is still down, it will begin to report that the key has been depressed repeatedly. For example, you would use such a feature to accelerate cursor movements with the arrow keys. You can then select the typematic rate and typematic delay in the "Typematic Rate (Chars/Sec)" and "Typematic Delay (Msec)" fields below.

Typematic Rate (Chars/Sec)

This field allows you to select the rate at which the keys are accelerated.

Typematic Delay (Msec)

This field allows you to select the delay between when the key was first depressed and when the acceleration begins.

Security Option

This field determines when the system will prompt for the password - everytime the system boots or only when you enter the BIOS setup. Set the password in the Set Supervisor/User Password submenu.

System The system will not boot and access to Setup will be denied unless the correct password is entered at the prompt.

Setup The system will boot, but access to Setup will be denied unless the correct password is entered at the prompt.

APIC Mode

Leave this field in its default setting.

MPS Version Control for OS

This field is used to select the MPS version that the system board is using.

OS Select for DRAM > 64MB

Select the "OS2" option only if the system that is running an OS/2 operating system has greater than 64MB RAM.

HDD S.M.A.R.T. Capability

The system board supports SMART (Self-Monitoring, Analysis and Reporting Technology) hard drives. SMART is a reliability prediction technology for ATA/IDE and SCSI drives. The drive will provide sufficient notice to the system or user to backup data prior to the drive's failure. The default is Disabled. If you are using hard drives that support S.M.A.R.T., set this field to Enabled. SMART is supported in ATA/33 or later hard drives.

Full Screen Logo Show

This field is applicable only if you want a particular logo to appear during system boot-up.

Enabled The logo will appear in full screen during system boot-up.

Disabled The logo will not appear during system boot-up.

Small Logo(EPA) Show

Enabled The EPA logo will appear during system boot-up.

Disabled The EPA logo will not appear during system boot-up.

Advanced Chipset Features

Phoenix - AwardBIOS CMOS Setup Utility Advanced Chipset Features			Item Help
AGP Aperture Size (MB)	128M		
x AGP 3.0 Speed	Auto		
AGP 2.0 Speed	Auto		
AGP Fast Write	Auto		
AGP Sideband Address	Auto		
Special I/O for PCI Card	Disabled		
x Base I/O Address	0000		
x I/O Length	1 Byte		
System BIOS Cacheable	Disabled		
↑↓: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults			Menu Level ▶

The settings on the screen are for reference only. Your version may not be identical to this one.

This section gives you functions to configure the system based on the specific features of the chipset. The chipset manages bus speeds and access to system memory resources. **These items should not be altered unless necessary.** The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered some incompatibility or that data was being lost while using your system.

AGP Aperture Size (MB)

This field is used to select the size of the system RAM that can be allocated to the AGP for graphics purposes. Aperture refers to a portion of the PCI memory address range that is dedicated for the graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.

AGP 3.0 Speed

This field is configurable only when you are using an AGP 3.0 mode card that supports AGP 8x with up to 2.13GB/sec. bandwidth. You can also select another mode from the options available in this field.

AGP 2.0 Speed

This field is used to configure AGP 2.0 mode card that supports AGP 4x with up to 1066MB/sec. bandwidth. You can also select another mode from the options available in this field.

AGP Fast Write

This field is used to enable or disable the AGP Fast Write function. AGP Fast Write allows the CPU to send data directly to the graphics controller - skipping the system memory. This improves the speed accordingly.

AGP SideBand Address

- Auto* The system will run according to the mode of the AGP card installed on the system board.
- Disabled* Disables AGP 3.0 mode.

Special I/O for PCI Card

Set this field to Enabled to configure the "Base I/O Address" and "I/O Length" fields.

System BIOS Cacheable

When this field is enabled, accesses to the system BIOS ROM addressed at F0000H-FFFFFH are cached, provided that the cache controller is enabled. The larger the range of the Cache RAM, the higher the efficiency of the system.

Integrated Peripherals

Phoenix - AwardBIOS CMOS Setup Utility		
Integrated Peripherals		
<ul style="list-style-type: none"> ▶ IDE Function Setup ▶ RAID Config ▶ Onboard Device Init Display First OnChip USB USB Memory Type USB KB/Storage Support USB Park Mode USB Perf Mode USB Read Requests From AC97 Audio MAC Lan MAC Media Interface IDE HDD Block Mode 	<ul style="list-style-type: none"> Press Enter Press Enter Press Enter PCI Slot UI.1+02.0 SHADOW Disabled Enabled non-ISO Queue ISO Queue Auto Auto RGMI I Disabled 	<div>Item Help</div> <div>Menu Level ▶</div>
↑↓←→:Move Enter:Select +/~/PU/PD:Value F10:Save ESC:Exit F1:General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

The settings on the screen are for reference only. Your version may not be identical to this one.

IDE Function Setup

Phoenix - AwardBIOS CMOS Setup Utility		
IDE Function Setup		
<ul style="list-style-type: none"> OnChip IDE Channel0 Primary Master PIO Primary Slave PIO Primary Master UDMA Primary Slave UDMA OnChip IDE Channel1 Secondary Master PIO Secondary Slave PIO Secondary Master UDMA Secondary Slave UDMA IDE Prefetch Mode IDE DMA transfer access Serial-ATA SATA DMA transfer Serial-ATA 2<Internal PHY> SATA2 DMA transfer 	<ul style="list-style-type: none"> Enabled Auto Auto Auto Auto Enabled Auto Auto Auto Auto Enabled Enabled Disabled Disabled Disabled Enabled 	<div>Item Help</div> <div>Menu Level ▶▶</div>
↑↓←→:Move Enter:Select +/~/PU/PD:Value F10:Save ESC:Exit F1:General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

The settings on the screen are for reference only. Your version may not be identical to this one.

OnChip IDE Channel0 and OnChip IDE Channel1

These fields allow you to enable or disable the primary and secondary IDE controller. The default is Enabled. Select Disabled if you want to add a different hard drive controller.

Primary Master/Slave PIO and Secondary Master/Slave PIO

PIO means Programmed Input/Output. Rather than have the BIOS issue a series of commands to effect a transfer to or from the disk drive, PIO allows the BIOS to tell the controller what it wants and then let the controller and the CPU perform the complete task by themselves. Your system supports five modes, 0 (default) to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode after checking your drive.

- | | |
|-----------------|--|
| <i>Auto</i> | The BIOS will automatically set the system according to your hard disk drive's timing. |
| <i>Mode 0-4</i> | You can select a mode that matches your hard disk drive's timing. Caution: Do not use the wrong setting or you will have drive errors. |

Primary Master/Slave UDMA and Secondary Master/Slave UDMA

These fields allow you to set the Ultra DMA in use. When Auto is selected, the BIOS will select the best available option after checking your hard drive or CD-ROM.

- | | |
|-----------------|--|
| <i>Auto</i> | The BIOS will automatically detect the settings for you. |
| <i>Disabled</i> | The BIOS will not detect these categories. |

IDE Prefetch Mode

This allows data and addresses to be stored in the internal buffer of the chip, thus reducing access time. Enable this field to achieve better performance.

IDE DMA Transfer Access

This field is used to enable or disable the DMA transfer function of an IDE hard drive.

Serial-ATA

This field is used to enable or disable SATA 1 and/or SATA 2 (supported by Marvell SATA Phy).

SATA DMA Transfer

This field is used to enable or disable the DMA transfer function of SATA 1 and/or SATA 2.

Serial-ATA 2 (Internal Phy)

This field is used to enable or disable SATA 3 and/or SATA 4 (supported by nForce3 Ultra).

SATA2 DMA Transfer

This field is used to enable or disable the DMA transfer function of SATA 3 and/or SATA 4.

RAID Config

The system board allows RAID arrays spanning across Parallel ATA and Serial ATA. This section is used to enable the RAID function of the Parallel ATA and Serial ATA channels.

IDE RAID

This field is used to enable or disable the RAID function of Parallel ATA drives and Serial ATA drives.

IDE Channel 0 Master RAID and IDE Channel 0 Slave RAID

These fields are used to enable or disable the RAID function of the primary IDE's master and slave channels.

IDE Channel 1 Master RAID and IDE Channel 1 Slave RAID

These fields are used to enable or disable the RAID function of the secondary IDE's master and slave channels.

SATA Primary Master RAID and SATA Secondary Master RAID

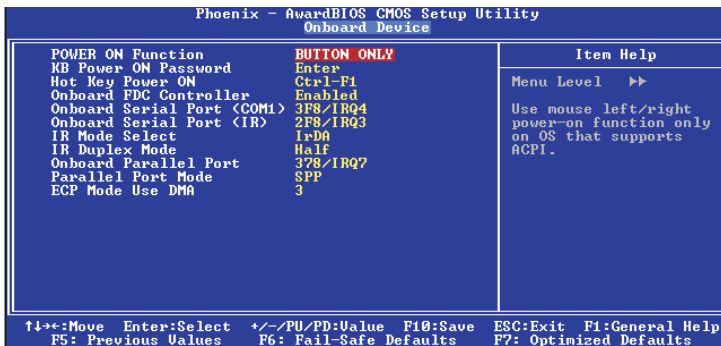
These fields are used to enable or disable the RAID function of SATA 1 and/or SATA 2.

SATA-2 Primary Master RAID and SATA-2 Secondary Master RAID

These fields are used to enable or disable the RAID function of SATA 3 and/or SATA 4.

Onboard Device

Move the cursor to this field and press <Enter>. The following screen will appear:



The settings on the screen are for reference only. Your version may not be identical to this one.

Power On Function

This field allows you to use the keyboard or PS/2 mouse to power-on the system.

- Button only* Default setting. Uses the power button to power on the system.
- Password* When this option is selected, set the password you would like to use to power-on the system in the "KB Power On Password" field.
- Hot Key* When this option is selected, select the function key you would like to use to power-on the system in the "Hot Key Power On" field.
- Mouse Left* When this option is selected, double-click the left button of the mouse to power-on the system.

Mouse Right When this option is selected, double-click the right button of the mouse to power-on the system.

Any Key Press any key to power-on the system.

Keyboard 98 When this option is selected, press the “wake up” key of the Windows® 98 compatible keyboard to power-on the system.

KB Power On Password

Move the cursor to this field and press <Enter>. Enter your password. You can enter up to 5 characters. Type in exactly the same password to confirm, then press <Enter>.

The power button will not function once a keyboard password has been set in this field. You must type the correct password to power-on the system. If you forgot the password, power-off the system and remove the battery. Wait for a few seconds and install it back before powering-on the system.

Hot Key Power On

This field is used to select a function key that you would like to use to power-on the system.

Onboard FDC Controller

Enabled Enables the onboard floppy disk controller.

Disabled Disables the onboard floppy disk controller.

Onboard Serial Port (COM1)

Auto The system will automatically select an I/O address for the onboard serial port.

3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3 Allows you to manually select an I/O address for the onboard serial port.

Disabled Disables the onboard serial port.

Onboard Serial Port (IR)

This field is used to select the I/O address of the IrDA device.

IR Mode Select

This field is used to select the type of IrDA standard supported by your IrDA device. For better transmission of data, your IrDA peripheral device must be within a 30° angle and within a distance of 1 meter.

IR Duplex Mode

- Half* Data is completely transmitted before receiving data.
- Full* Transmits and receives data simultaneously.

Onboard Parallel Port

- 378/IRQ7, 3BC/IRQ7, 278/IRQ5* Selects the I/O address and IRQ for the onboard parallel port.
- Disabled* Disables the onboard parallel port.

Parallel Port Mode

The options are SPP, EPP, ECP and ECP+EPP. These apply to standard specifications and will depend on the type and speed of your device. Refer to your peripheral's manual for the best option.

SPP

Allows normal speed operation but in one direction only.

“ECP (Extended Capabilities Port)”

Allows parallel port to operate in bidirectional mode and at a speed faster than the normal mode's data transfer rate.

“EPP (Enhanced Parallel Port)”

Allows bidirectional parallel port operation at maximum speed.

ECP Mode Use DMA

This field is used to select the DMA channel used for the parallel port.

Init Display First

This field is used to select whether to initialize the AGP or PCI first when the system boots.

AGP When the system boots, it will first initialize the AGP.

PCI Slot When the system boots, it will first initialize PCI.

OnChip USB

This field is used to enable or disable USB 1.1 and/or USB 2.0.

USB Memory Type

The options are Shadow and Base Memory.

USB KB/Storage Support

If you are using a USB device, set this field to Enabled.

USB Park Mode

The options are Enabled and Disabled.

USB Perf Mode

The options are Optimal, High, Compatible and Moderate.

USB Read Requests From

The options are non-ISO Queue and ISO Queue.

AC97 Audio

Auto Select this option when using the onboard audio.

Disabled Select this option when using a PCI sound card.

MAC LAN

This field is used to enable or disable the onboard LAN controller.

MAC Media Interface

The options are MII, RGMII and Pin Strap.

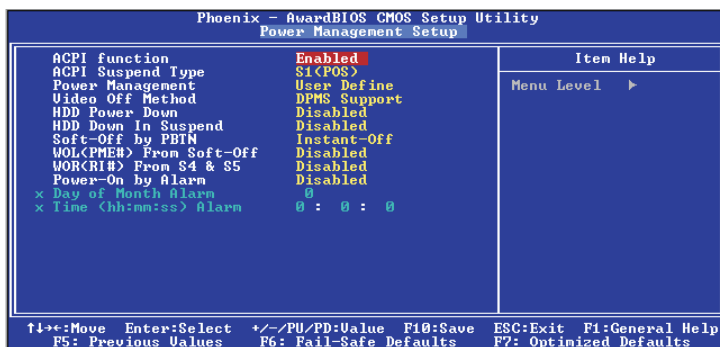
IDE HDD Block Mode

Enabled The IDE HDD uses the block mode. The system BIOS will check the hard disk drive for the maximum block size the system can transfer. The block size will depend on the type of hard disk drive.

Disabled The IDE HDD uses the standard mode.

Power Management Setup

The Power Management Setup allows you to configure your system to most effectively save energy.



The settings on the screen are for reference only. Your version may not be identical to this one.

ACPI Function

This function should be enabled only in operating systems that support ACPI. Currently, only Windows® 98SE/2000/ME/XP supports this function. When this field is enabled, the system will ignore the settings in the “HDD Power Down” field. If you want to use the Suspend to RAM function, make sure this field is enabled then select “S3(STR)” in the field below.

ACPI Suspend Type

This field is used to select the type of Suspend mode.

- S1(POS) Enables the Power On Suspend function.
- S3(STR) Enables the Suspend to RAM function.

Power Management

This field allows you to select the type (or degree) of power saving by changing the length of idle time that elapses before the "HDD Power Down" field is activated.

<i>Min Saving</i>	Minimum power saving time for the "HDD Power Down" = 15 min.
<i>Max Saving</i>	Maximum power saving time for the "HDD Power Down" = 1 min.
<i>User Define</i>	Allows you to set the power saving time in the "HDD Power Down" field.

Video Off Method

This determines the manner in which the monitor is blanked.

<i>VIH SYNC + Blank</i>	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
<i>Blank Screen</i>	This option only writes blanks to the video buffer.
<i>DPMS</i>	Initializes display power management signaling. Use this option if your video board supports it.

HDD Power Down

This is selectable only when the Power Management field is set to User Define. When the system enters the HDD Power Down mode according to the power saving time selected, the hard disk drive will be powered down while all other devices remain active.

Soft-Off by PBTN

This field allows you to select the method of powering off your system.

Delay 4 Sec. Regardless of whether the Power Management function is enabled or disabled, if the power button is pushed and released in less than 4 sec, the system enters the Suspend mode. The purpose of this function is to prevent the system from powering off in case you accidentally “hit” or pushed the power button. Push and release again in less than 4 sec to restore. Pushing the power button for more than 4 seconds will power off the system.

Instant-Off Pressing and then releasing the power button at once will immediately power off your system.

WOL (PME#) From Soft-Off

Set this field to Enabled to wake up the system via the onboard LAN or via a LAN card that uses the PCI PME (Power Management Event) signal to remotely wake up the system. Access to the LAN card will cause the system to wake up. Refer to the card's documentation for more information.

WOR (RI#) From Soft-Off

Set this field to Enabled to wake up the system via an external modem or via a modem card that uses the PCI PME (Power Management Event) signal to remotely wake up the system. Access to the modem card will cause the system to wake up. Refer to the card's documentation for more information.

Power-On By Alarm

Enabled When Enabled, you can set the time you would like the Soft Power Down (Soft-Off) PC to power-on in the "Time (dd:hh:mm) of Alarm" field. However, if the system is being accessed by incoming calls or the network prior to the time set in the field, the system will give priority to the incoming calls or network.

Disabled Disables the automatic power-on function. (default)

Day (of Month) Alarm

0 The system will power-on everyday according to the time set in the "Time (hh:mm:ss) Alarm" field.

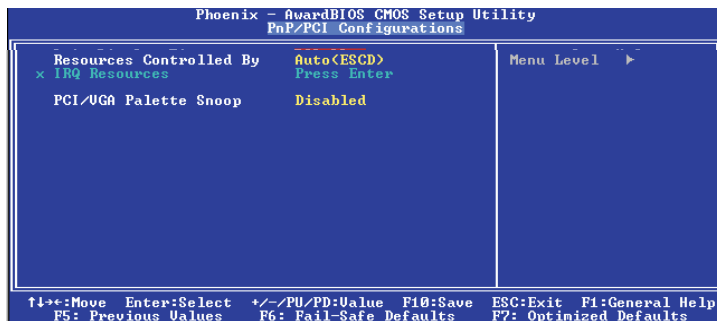
1-31 Select a date you would like the system to power-on. The system will power-on on the set date, and time set in the "Time (hh:mm:ss) Alarm" field.

Time (hh:mm:ss) of Alarm

This is used to set the time you would like the system to power-on.

PnP/PCI Configurations

This section describes configuring the PCI bus system. It covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.



The settings on the screen are for reference only. Your version may not be identical to this one.

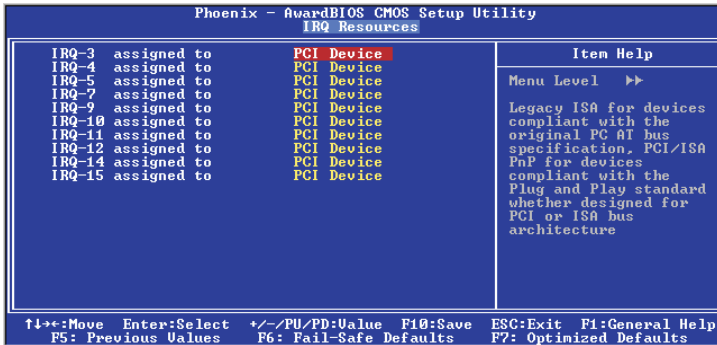
Resources Controlled By

The Award Plug and Play BIOS has the capability to automatically configure all of the boot and Plug and Play compatible devices.

- Auto(ESCD)* The system will automatically detect the settings for you.
- Manual* Choose the specific IRQ in the "IRQ Resources" field.

IRQ Resources

Move the cursor to this field and press <Enter>. This field is used to set each system interrupt to either Reserved or PCI Device.



The settings on the screen are for reference only. Your version may not be identical to this one.

PCI/VGA Palette Snoop

This field determines whether the MPEG ISA/VESA VGA cards can work with PCI/VGA or not.

Enabled MPEG ISA/VESA VGA cards work with PCI/VGA.

Disabled MPEG ISA/VESA VGA cards does not work with PCI/VGA.

PC Health Status

Phoenix - AwardBIOS CMOS Setup Utility	
PC Health Status	
Shutdown Temperature	75°C/167°F
VCC3 Voltage	
+5V Voltage	
+12V Voltage	
5V Standby Voltage	
Voltage Battery	
CPU Temperature	
SYSTEM<Inside> TEMP	
SYSTEM<Outside> TEMP	
CPU FAN Speed	
Chipset Fan Speed	
SYSTEM FAN Speed	
	Item Help
	Menu Level ▶
↑↓←→: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults	

The settings on the screen are for reference only. Your version may not be identical to this one.

Shutdown Temperature

You can prevent the system from overheating by selecting a temperature in this field. If the system detected that its temperature exceeded the one set in this field, it will automatically shutdown.

VCC3 Voltage to System Fan Speed

These fields will show the output voltage, temperature and fan speed of the monitored devices or components.

Genie BIOS Setting



The screen above list all the fields available in the Genie BIOS Setting submenu, for ease of reference in this manual. In the actual CMOS setup, you have to use the scroll bar to view the fields. The settings on the screen are for reference only. Your version may not be identical to this one.

Current CPU Frequency is

This field will show the detected frequency of the CPU.

CPU Overclock in Mhz

This field provides several options for selecting the external system bus clock of the processor. The available options allow you to adjust the processor's bus clock by 1MHz increment.



Important:

Selecting an external bus clock other than the default setting may result to the processor's or system's instability and are not guaranteed to provide better system performance.

Hammer Fid Control

This field is used to select the CPU FSB's operating frequency.

AGP Overclock in Mhz

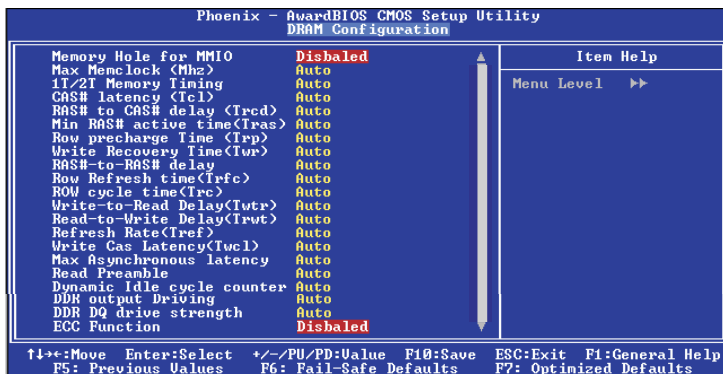
This field is used to select the AGP clock.

HT Frequency

This field is used to select the maximum operating frequency.

DRAM Configuration

Move the cursor to this field and press <Enter>. The following screen will appear:



The screen above lists all the fields available in the DRAM Configuration submenu, for ease of reference in this manual. In the actual CMOS setup, you have to use the scroll bar to view the fields. The settings on the screen are for reference only. Your version may not be identical to this one.

Memory Hole for MMIO

This field is used to enable or disable the memory hole for MMIO.

Max Memclock (Mhz)

This field is used to select the maximum memory clock. If you are installing double rank DDR400 on both DDR 1 and DDR 2 sockets, the maximum DRAM speed will be limited to the speed of a DDR333. However, you can manually adjust the speed to DDR400 by selecting the "200" option in this field.

1T/2T Memory Timing

2T timing which provides better system stability is supported in CG or later revisions of the AMD Athlon™ 64 CPU. This field will not appear if you are using a CPU whose version is older than the CG revision.

- Auto* Automatically detects the memory timing.
- 1T* Sets the memory timing to Performance mode. Select this mode for better system performance.
- 2T* Sets the memory timing to Normal mode. Select this mode if you encounter system instability. (default)

CAS# Latency (Tcl)

This field is used to select the clock cycle of the CAS latency time. The option selected specifies the timing delay before SDRAM starts a read command after receiving it.

RAS# to CAS# Delay (Trcd)

When DRAM refreshes, both rows and columns are addressed separately. This field is used to select the delay time from RAS (Row Address Strobe) to CAS (Column Address Strobe) when reading and writing to the same bank. The lesser the clock cycle, the faster the DRAM's performance.

Min RAS# Active Time (Tras)

This field is used to select the minimum time RAS takes to read from and write to a memory cell.

Row Precharge Time (Trp)

This field is used to select the number of cycles that is allowed for Row Address Strobe (RAS) to precharge. If insufficient time is allowed for the RAS to accumulate its charge before DRAM refreshes, refreshing may be incomplete and DRAM may fail to retain data.

Write Recovery Time (Twr)

This field is used to select the write recovery time when the DRAM safely registers the last write data. This is the time from the last write data to precharge.

RAS#-to-RAS# Delay

This field is used to select the delay time from RAS (Row Address Strobe) to the next RAS (Row Address Strobe) when reading to the same bank. The lesser the clock cycle, the faster the DRAM's performance.

Row Refresh Time (Trfc)

This field is used to select the row refresh cycle time. Auto refresh active to RAS# active or RAS# to auto refresh - similar to Trc.

Row Cycle Time (Trc)

This field is used to select the row cycle time, RAS# active or auto refresh of the same bank.

Write to Read Delay (Twtr)

This field is used to select the write to read delay time. This is measured from the rising edge of the last non-masked data strobe to the rising edge of the next read command.

Read to Write Delay (Trwt)

This field is used to select the read to write delay time. Although this is not a DRAM specified timing parameter; it is related to the routing latencies on the clock forwarded bus. This is measured from the first address bus slot which is not associated with part of the read burst.

Refresh Rate (Tref)

This field is used to select the refresh rate of the DIMM that requires the most frequent refresh.

Write CAS Latency (Twcl)

This field is used to select the write CAS latency time.

Max Asynchronous Latency

This field is used to select a value equal to the maximum asynchronous latency in the DRAM read round-trip loop.

Read Preamble

When the DQS receiver is turned on, you can select the time prior to the max-read DQS return. This will notify the controller on when to enable its DQS receiver when awaiting the DRAM DQS driver to turn on for a read. The controller will disable its DQS receiver until the read preamble time and then enable its DQS receiver while the DRAM asserts DQS.

Dynamic Idle Cycle Counter

This field is used to enable the dynamic idle cycle counter.

DDR Output Driving

The default setting is Auto, Normal Drive and Weak Drive.

DDR DQ Drive Strength

This field is used to select a level of the DRAM drive strength.

ECC Function

This field is used to enable or disable the ECC function.

AMD K8 Cool & Quiet

- | | |
|-----------------|--|
| <i>Auto</i> | Enables AMD's Cool'n'Quiet technology. This function allows the system to detect the CPU's tasks and utilization status. When the CPU's task slows down, the system effectively lowers power consumption by changing its CPU speed and voltage, subsequently decreasing its noise level. |
| <i>Disabled</i> | Disables AMD's Cool'n'Quiet technology. |

CPU VID Control

This field allows you to manually adjust to a higher core voltage that is supplied to the CPU. If you want to use the CPU's default core voltage, leave this field in its default setting. The CPU's Vcore will be generated according to the CPU VID configuration.

**Important:**

Although this function is supported, we do not recommend that you use a higher voltage because unstable current may be supplied to the system board causing damage.

CPU Voltage Adjusting

This field provides more options to further adjust the voltage of the CPU by 0.1V increment.

Current CPU Voltage

This field will show the CPU's current voltage.

Chipset Voltage Control

This field allows you to manually select higher voltage supplied to the chipset. If you want to use the default voltage, leave this field in its default setting.

**Important:**

Although this function is supported, we do not recommend that you use a higher voltage because unstable current may be supplied to the system board causing damage.

Current Chip Voltage

This field will show the chip's current voltage.

Memory Voltage Control

This field allows you to manually select higher voltage supplied to the DRAM. If you want to use the DRAM's default voltage, leave this field in its default setting.



Important:

Although this function is supported, we do not recommend that you use a higher voltage because unstable current may be supplied to the system board causing damage.

DDR Strength Control

The options are Level 1, Level 2, Level 3 and Level 4.

Current Memory Voltage

This field will show the DRAM's current voltage.

AGP Voltage Control

This field allows you to manually select higher voltage supplied to the AGP. If you want to use the default voltage, leave this field in its default setting.



Important:

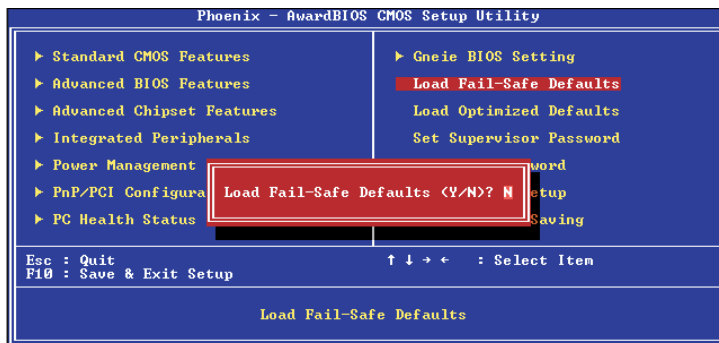
Although this function is supported, we do not recommend that you use a higher voltage because unstable current may be supplied to the system board causing damage.

Current AGP Voltage

This field will show the AGP's current voltage.

Load Fail-Safe Defaults

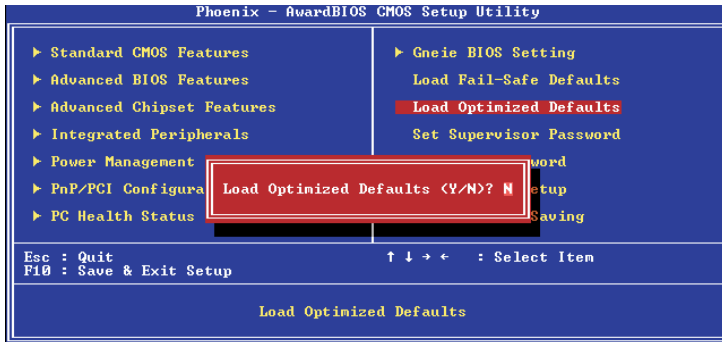
The “Load Fail-Safe Defaults” option loads the troubleshooting default values permanently stored in the ROM chips. These settings are not optimal and turn off all high performance features. You should use these values only if you have hardware problems. Highlight this option in the main menu and press <Enter>.



If you want to proceed, type <Y> and press <Enter>. The default settings will be loaded.

Load Optimized Defaults

The “Load Optimized Defaults” option loads optimized settings from the BIOS ROM. Use the default values as standard values for your system. Highlight this option in the main menu and press <Enter>.

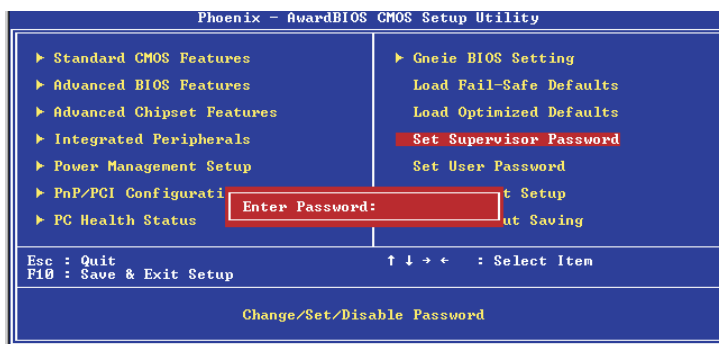


Type <Y> and press <Enter> to load the Setup default values.

Set Supervisor Password

If you want to protect your system and setup from unauthorized entry, set a supervisor's password with the "System" option selected in the Advanced BIOS Features. If you want to protect access to setup only, but not your system, set a supervisor's password with the "Setup" option selected in the Advanced BIOS Features. You will not be prompted for a password when you cold boot the system.

Use the arrow keys to highlight "Set Supervisor Password" and press <Enter>.



Type in the password. You are limited to eight characters. When done, the message below will appear:

Confirm Password:

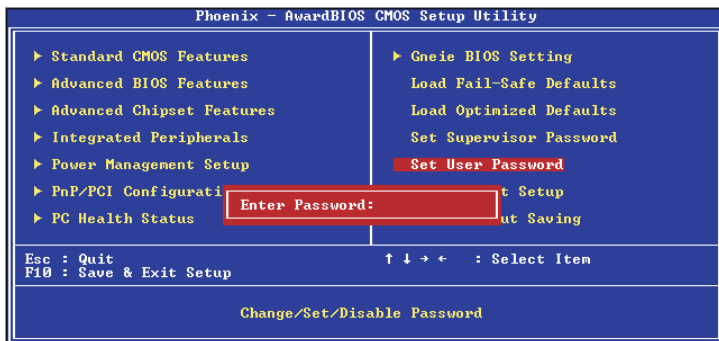
You are asked to verify the password. Type in exactly the same password. If you type in a wrong password, you will be prompted to enter the correct password again. To delete or disable the password function, highlight "Set Supervisor Password" and press <Enter>, instead of typing in a new password. Press the <Esc> key to return to the main menu.

Set User Password

If you want another user to have access only to your system but not to setup, set a user's password with the "System" option selected in the Advanced BIOS Features. If you want a user to enter a password when trying to access setup, set a user's password with the "Setup" option selected in the Advanced BIOS Features.

Using user's password to enter Setup allows a user to access only "Set User Password" that appears in the main menu screen. Access to all other options is denied.

Use the arrow keys to highlight "Set User Password" and press <Enter>.



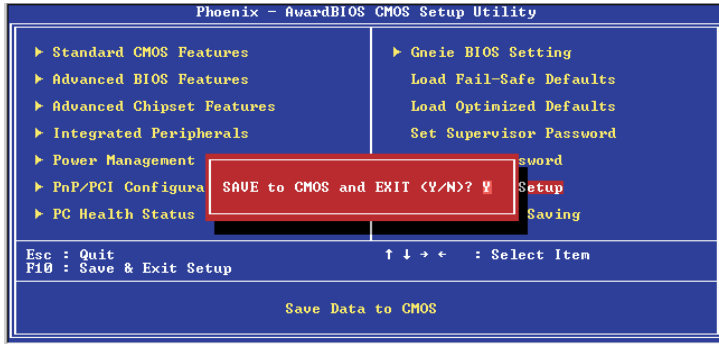
Type in the password. You are limited to eight characters. When done, the message below will appear:

Confirm Password:

You are asked to verify the password. Type in exactly the same password. If you type in a wrong password, you will be prompted to enter the correct password again. To delete or disable the password function, highlight "Set User Password" and press <Enter>, instead of typing in a new password. Press the <Esc> key to return to the main menu.

Save & Exit Setup

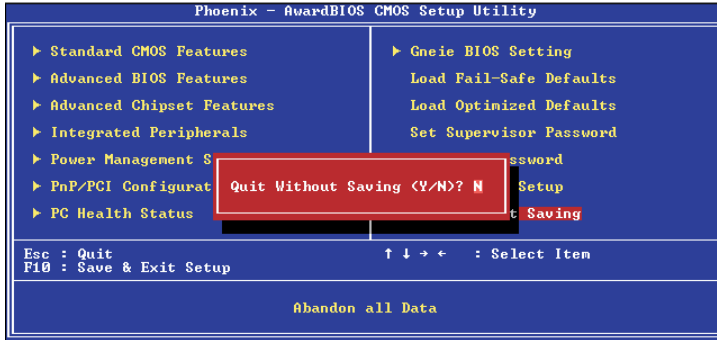
When all the changes have been made, highlight “Save & Exit Setup” and press <Enter>.



Type “Y” and press <Enter>. The modifications you have made will be written into the CMOS memory, and the system will reboot. You will once again see the initial diagnostics on the screen. If you wish to make additional changes to the setup, press <Ctrl> <Alt> <Esc> simultaneously or after memory testing is done.

Exit Without Saving

When you do not want to save the changes you have made, highlight “Exit Without Saving” and press <Enter>.



Type “Y” and press <Enter>. The system will reboot and you will once again see the initial diagnostics on the screen. If you wish to make any changes to the setup, press <Ctrl> <Alt> <Esc> simultaneously or after memory testing is done.

NVRAID BIOS

The NVRAID BIOS utility is used to configure and manage RAID on Serial ATA drives and Parallel ATA drives.

After you power up the system and all drives have been detected, the NVRAID BIOS status message screen will appear. Press the <F10> key to enter the utility. The utility allows you to build a RAID system on Serial ATA drives and Parallel ATA drives.

**Important:**

- *Before creating RAID, make sure you have connected Serial ATA drives and Parallel ATA drives.*
- *Set the "IDE RAID" field to Enabled (Integrated Peripherals submenu, RAID Config section of the Award BIOS.)*
- *Enable the IDE and/or Serial ATA drives you want to configure as RAID (Integrated Peripherals submenu, RAID Config section of the Award BIOS.)*

Updating the BIOS

To update the BIOS, you will need the new BIOS file and a flash utility, AWDFLASH.EXE. You can download them from DFI's web site or contact technical support or your sales representative.

1. Save the new BIOS file along with the flash utility AWDFLASH.EXE to a floppy disk.
2. Reboot the system and enter the Award BIOS Setup Utility to set the first boot drive to "Floppy".
3. Save the setting and reboot the system.
4. After the system booted from the floppy disk, execute the flash utility by typing AWDFLASH.EXE. The following screen will appear:

<p>Award BIOS Flash Utility V.8.15B (C) Phoenix Technologies Ltd. All Rights Reserved.</p>
<p>(The current BIOS information will appear in this area.)</p> <p>File Name to Program : <input type="text"/></p>

5. Type the new BIOS file name onto the gray area that is next to "File Name to Program" then press <Enter>.

6. The following will appear:

Do You Want to Save BIOS (Y/N)

This question refers to the current existing BIOS in your system. We recommend that you save the current BIOS and its flash utility; just in case you need to reinstall the BIOS. To save the current BIOS, press <Y> then enter the file name of the current BIOS. Otherwise, press <N>.

7. The following will then appear:

Press "Y" to Program or "N" to Exit

8. Press <Y> to flash the new BIOS.

Chapter 4 - Supported Software

Drivers, Utilities and Software Applications

The CD that came with the system board contains drivers, utilities and software applications required to enhance the performance of the system board.

Insert the CD into a CD-ROM drive. The autorun screen (Mainboard Utility CD) will appear. If after inserting the CD, "Autorun" did not automatically start (which is, the Mainboard Utility CD screen did not appear), please go directly to the root directory of the CD and double-click "Setup".



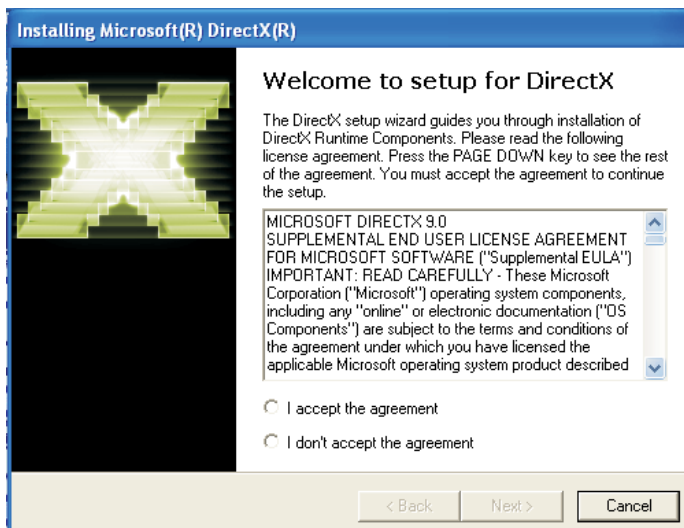
Important:

You must first install Microsoft DirectX 9 prior to installing the "nVidia nF3 Ultra Drivers".

Microsoft DirectX 9

To install, please follow the steps below.

1. On the left side of the autorun screen, click the "TOOLS" icon.
2. Click "Microsoft DirectX 9" on the main menu. The following screen will appear:



3. Click "I accept the agreement" then click "Next".
4. Follow the prompts on the screen to complete installation.
5. Reboot the system for the driver to take effect.

NVIDIA Windows nForce Drivers

The NVIDIA Windows nForce Drivers contains the following.

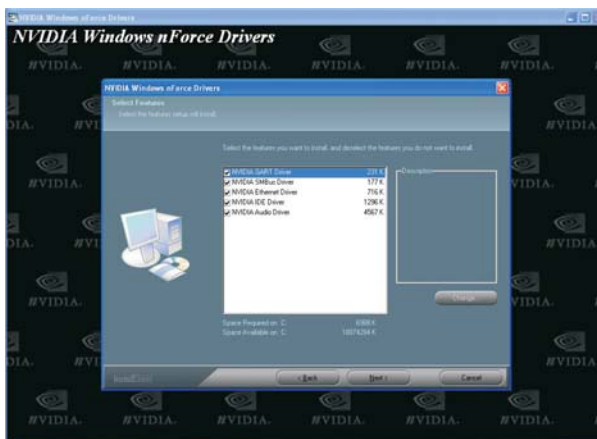
- NVIDIA GART Driver
- NVIDIA SMBus Driver
- NVIDIA Ethernet Driver
- NVIDIA IDE Driver
- NVIDIA Audio Driver

To install NVIDIA Windows nForce Drivers, please follow the steps below.

1. On the left side of the autorun screen, click the “CHIPSET” icon.
2. Click “nVidia nF3 Ultra Drivers” on the main menu. The following screen will appear: Click “Next”.



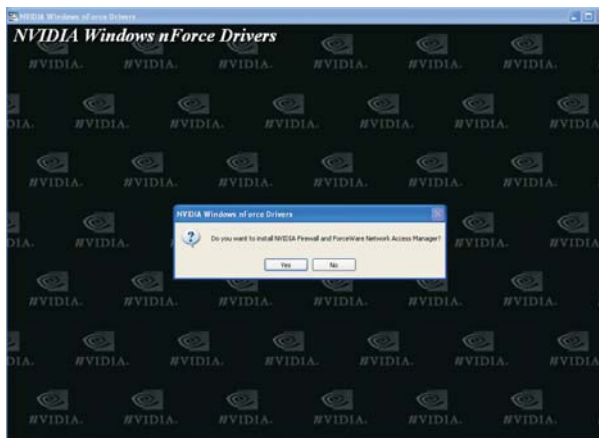
- The following screen will appear: Select the drivers you want to install. The drivers will be installed automatically. Make sure you have selected “NVIDIA IDE Driver” because this driver will replace Windows ATA drivers enabling the processor and other system level hardware to be more productive and efficient. Click “Next” to continue.



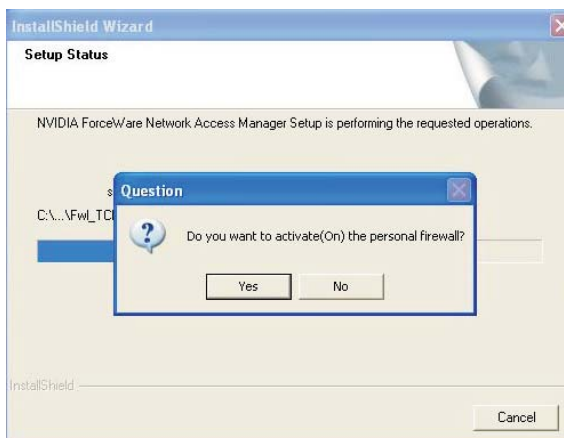
- The following screen will appear: Click “Next”.



- When prompted about installing NVIDIA Firewall and ForceWare Network Access Manager, click “Yes”.



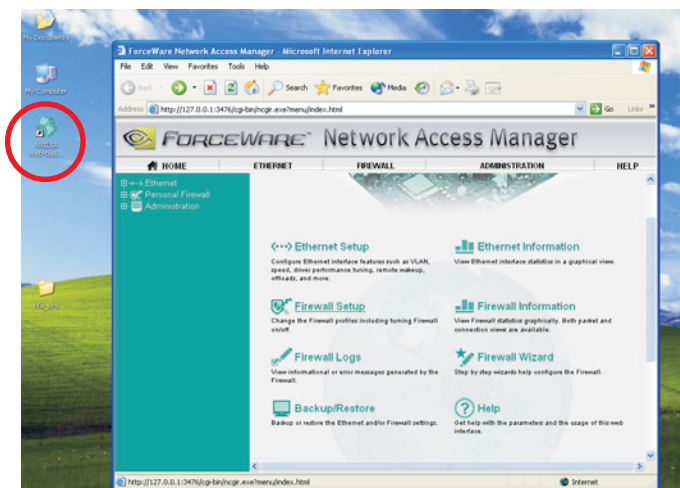
- The following screen will appear. Click “Yes” to activate Firewall.



- Follow the prompts on the screen to complete installation.

NVIDIA ForceWare Network Access Manager

After completing installation, the “NVIDIA web-based...” icon is automatically created on your desktop. Double-click this icon to launch the NVIDIA ForceWare Network Access Manager utility. The utility allows you to configure the Ethernet interface features and personal Firewall for optimized security. This prevents unauthorized access to your system's software or data.



RAID Configuration

The steps below describe configuring RAID on Serial ATA and Parallel ATA drives.

1. Run the Award BIOS setup utility then go to the Integrated Peripherals submenu - "RAID Config" section of the BIOS.
2. Set the "IDE RAID" field to "Enabled".
3. NVIDIA RAID allows RAID arrays spanning across Serial ATA and Parallel ATA therefore enable the IDE and/or Serial ATA drives you want to configure as RAID.
4. Save and exit the BIOS then reboot the PC.
5. When the system powers-up, the NVRAID BIOS status message screen will appear. Press the <F10> key to enter the utility. The utility allows you to build a RAID system on Serial ATA drives and Parallel ATA drives. Press the <Ctrl> and <X> keys to exit the RAID BIOS.
6. Press <F6> once the Windows blue setup screen appears.
7. Now the following steps are extremely crucial because there are 2 essential files that must be installed here. Press <S> to select "Specify Additional Device".
8. At this point you will be prompted to insert a floppy disk containing the RAID driver. Insert the "NVRAID Driver" diskette.
9. Locate for the drive where you inserted the diskette then select "NVIDIA nForce3 ATA Controller". Press <Enter> to install the driver.
10. Now press <S> again to specify another device.
11. This time, select "NVIDIA nForce3 ATA RAID Class Controller". Press <Enter> to install the driver. Make sure both files have been installed or the setup will fail.
12. After installing the operating system, if in any case necessary, create the hard drives' partition.

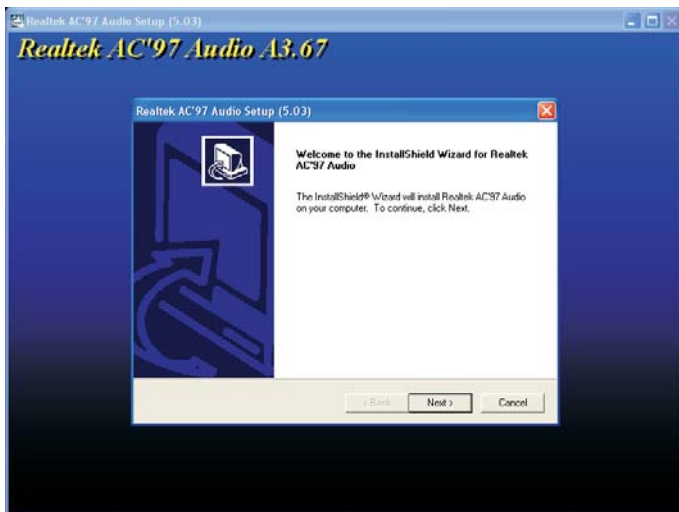
**Warning:**

Treat the hard drives' cables with extreme caution especially while creating RAID. A damaged cable will ruin the entire installation process and operating system. The system will not boot and you will lost all data in the hard drives. Please give special attention to this warning because there is no way of recovering back the data.

Realtek Audio Driver

To install the driver, please follow the steps below.

1. On the left side of the autorun screen, click the "AUDIO" icon.
2. Click "Realtek Audio Driver" on the main menu. The following screen will appear:



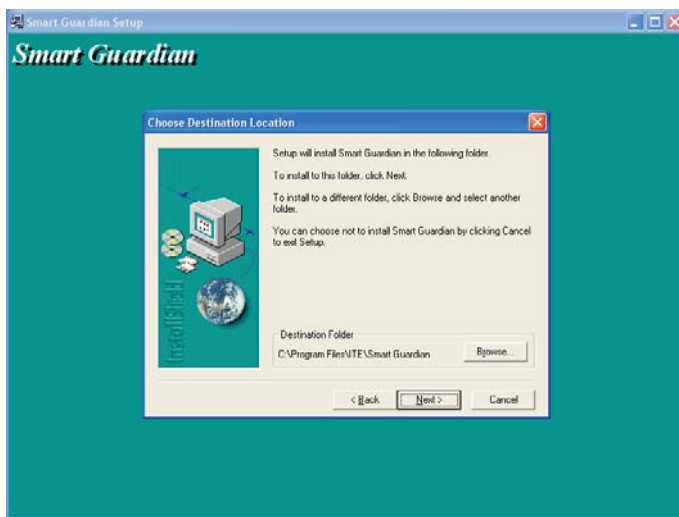
3. Follow the prompts on the screen to complete installation.
4. Reboot the system for the driver to take effect.

Hardware Monitor

The system board comes with the Hardware Monitor utility contained in the provided CD. This utility is capable of monitoring the system's temperature, fan speed, voltage, etc. and allows you to manually set a range (Highest and Lowest Limit) to the items being monitored. If the settings/values are over or under the set range, a warning message will pop-up. The utility can also be configured so that a beeping alarm will sound whenever an error occurs. We recommend that you use the "Default Setting" which is the ideal setting that would keep the system in good working condition.

To install, please follow the steps below.

1. On the left side of the autorun screen, click the "TOOLS" icon.
2. Click "Hardware Monitor" on the main menu.



3. Follow the prompts on the screen to complete installation.
4. Reboot the system for the driver to take effect.

USB 2.0 Drivers

Windows® XP

If your Windows® XP CD already includes Service Pack 1, the USB 2.0 driver will automatically install when you install the operating system. If the CD does not include Service Pack 1, it is available for download at Microsoft's Windows Update website.

Windows® 2000

If your Windows® 2000 CD already includes Service Pack 4, the USB 2.0 driver will automatically install when you install the operating system. If the CD does not include Service Pack 4, it is available for download at Microsoft's Windows Update website.

Installation Notes

1. "Autorun" ONLY supports the Windows® 98, Windows® 98 SE, Windows® ME, Windows® 2000 and Windows® XP operating systems. If after inserting the CD, "Autorun" did not automatically start (which is, the Main Board Utility CD screen did not appear), please go directly to the root directory of the CD and double-click "Setup".
2. All steps or procedures to install software drivers are subject to change without notice as the softwares are occasionally updated. Please go to DFI's web site at "<http://www.dfi.com/support1/download2.asp>" for the latest version of the drivers or software applications.

Appendix A - System Error Message

When the BIOS encounters an error that requires the user to correct something, either a beep code will sound or a message will be displayed in a box in the middle of the screen and the message, PRESS F1 TO CONTINUE, CTRL-ALT-ESC or DEL TO ENTER SETUP, will be shown in the information box at the bottom. Enter Setup to correct the error:

POST Beep

There are two kinds of beep codes in the BIOS. One code indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by three short beeps. The other code indicates that a DRAM error has occurred. This beep code consists of a single long beep.

Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list indicates the error messages for all Awards BIOSes:

CMOS BATTERY HAS FAILED

The CMOS battery is no longer functional. It should be replaced.



Caution:

Danger of explosion if battery incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the battery manufacturer's instructions.

CMOS CHECKSUM ERROR

Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

DISPLAY SWITCH IS SET INCORRECTLY

The display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different

setting than indicated in Setup. Determine which setting is correct, either turn off the system and change the jumper or enter Setup and change the VIDEO selection.

FLOPPY DISK(S) fail (80)

Unable to reset floppy subsystem.

FLOPPY DISK(S) fail (40)

Floppy type mismatch.

Hard Disk(s) fail (80)

HDD reset failed.

Hard Disk(s) fail (40)

HDD controller diagnostics failed.

Hard Disk(s) fail (20)

HDD initialization error.

Hard Disk(s) fail (10)

Unable to recalibrate fixed disk.

Hard Disk(s) fail (08)

Sector Verify failed.

Keyboard is locked out - Unlock the key

The BIOS detects that the keyboard is locked. Keyboard controller is pulled low.

Keyboard error or no keyboard present

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

Manufacturing POST loop

System will repeat POST procedure infinitely while the keyboard controller is pull low. This is also used for the M/B burn in test at the factory.

BIOS ROM checksum error - System halted

The checksum of ROM address F0000H-FFFFFH is bad.

Memory test fail

The BIOS reports memory test fail if the memory has error(s).

Appendix B - Troubleshooting

B.1 Troubleshooting Checklist

This chapter of the manual is designed to help you with problems that you may encounter with your personal computer. To efficiently troubleshoot your system, treat each problem individually. This is to ensure an accurate diagnosis of the problem in case a problem has multiple causes.

Some of the most common things to check when you encounter problems while using your system are listed below.

1. The power switch of each peripheral device is turned on.
2. All cables and power cords are tightly connected.
3. The electrical outlet to which your peripheral devices are connected is working. Test the outlet by plugging in a lamp or other electrical device.
4. The monitor is turned on.
5. The display's brightness and contrast controls are adjusted properly.
6. All add-in boards in the expansion slots are seated securely.
7. Any add-in board you have installed is designed for your system and is set up correctly.

Monitor/Display

If the display screen remains dark after the system is turned on:

1. Make sure that the monitor's power switch is on.
2. Check that one end of the monitor's power cord is properly attached to the monitor and the other end is plugged into a working AC outlet. If necessary, try another outlet.
3. Check that the video input cable is properly attached to the monitor and the system's display adapter.
4. Adjust the brightness of the display by turning the monitor's brightness control knob.

The picture seems to be constantly moving.

1. The monitor has lost its vertical sync. Adjust the monitor's vertical sync.
2. Move away any objects, such as another monitor or fan, that may be creating a magnetic field around the display.
3. Make sure your video card's output frequencies are supported by this monitor.

The screen seems to be constantly wavering.

1. If the monitor is close to another monitor, the adjacent monitor may need to be turned off. Fluorescent lights adjacent to the monitor may also cause screen wavering.

Power Supply

When the computer is turned on, nothing happens.

1. Check that one end of the AC power cord is plugged into a live outlet and the other end properly plugged into the back of the system.
2. Make sure that the voltage selection switch on the back panel is set for the correct type of voltage you are using.
3. The power cord may have a "short" or "open". Inspect the cord and install a new one if necessary.

Floppy Drive

The computer cannot access the floppy drive.

1. The floppy diskette may not be formatted. Format the diskette and try again.
2. The diskette may be write-protected. Use a diskette that is not write-protected.
3. You may be writing to the wrong drive. Check the path statement to make sure you are writing to the targeted drive.
4. There is not enough space left on the diskette. Use another diskette with adequate storage space.

Hard Drive

Hard disk failure.

1. Make sure the correct drive type for the hard disk drive has been entered in the BIOS.
2. If the system is configured with two hard drives, make sure the bootable (first) hard drive is configured as Master and the second hard drive is configured as Slave. The master hard drive must have an active/bootable partition.

Excessively long formatting period.

If your hard drive takes an excessively long period of time to format, it is likely a cable connection problem. However, if your hard drive has a large capacity, it will take a longer time to format.

Parallel Port

The parallel printer doesn't respond when you try to print.

1. Make sure that your printer is turned on and that the printer is on-line.
2. Make sure your software is configured for the right type of printer attached.
3. Verify that the onboard LPT port's I/O address and IRQ settings are configured correctly.
4. Verify that the attached device works by attaching it to a parallel port that is working and configured correctly. If it works, the printer can be assumed to be in good condition. If the printer remains inoperative, replace the printer cable and try again.

Serial Port

The serial device (modem, printer) doesn't output anything or is outputting garbled characters.

1. Make sure that the serial device's power is turned on and that the device is on-line.
2. Verify that the device is plugged into the correct serial port on the rear of the computer.

3. Verify that the attached serial device works by attaching it to a serial port that is working and configured correctly. If the serial device does not work, either the cable or the serial device has a problem. If the serial device works, the problem may be due to the onboard I/O or the address setting.
4. Make sure the COM settings and I/O address are configured correctly.

Keyboard

Nothing happens when a key on the keyboard was pressed.

1. Make sure the keyboard is properly connected.
2. Make sure there are no objects resting on the keyboard and that no keys are pressed during the booting process.

System Board

1. Make sure the add-in card is seated securely in the expansion slot. If the add-in card is loose, power off the system, re-install the card and power up the system.
2. Check the jumper settings to ensure that the jumpers are properly set.
3. Verify that all memory modules are seated securely into the memory sockets.
4. Make sure the memory modules are in the correct locations.
5. If the board fails to function, place the board on a flat surface and seat all socketed components. Gently press each component into the socket.
6. If you made changes to the BIOS settings, re-enter setup and load the BIOS defaults.